

**PSYCHOLOGY
FOR NORMAL SCHOOLS**

changes in human beings. The *instructional* approach begins immediately with the teaching process itself, and reveals the teacher as the instrument and the pupil as the object of education, and how these two meet and interact through the machinery of the school as expressed in school organization, discipline, programs, curriculum, studying, reciting, grading, and promotion, and the importance of the teacher's personality in such a process.

It has been one of the purposes of the Riverside Textbooks in Education to present to teachers and students texts which will enable instructors to follow any one of these four main approaches, or to combine two or more in an introductory course in teacher training. The first line of approach has been covered in the Editor's *Public Education in the United States*; a textbook for the second is in preparation, and will be ready before long; the third is covered by the present volume, and the fourth has been covered by Sears's *Classroom Organization and Control*.

Professor Averill's text, representing the *psychological* approach, presents the child to be taught in the threefold aspect of his original equipment of instincts and capacities, the processes by means of which he learns, and the differences that exist between children. The study of the child's original equipment is approached through a study of his behavior. This is followed by a study of the child's heredity, and capacity for learning. The third main division of the volume, discusses the differences between individuals and the causes for them, and the effect of these differences on the problem of child training.

The book, in keeping with its introductory character, is divided into a series of Lessons, rather than chapters; and these are preceded by a few suggestions for Observational Studies to prepare the student better for what is to be presented in the lessons. A series of Topics for Further Study have been added to the lessons, and finally a related series, entitled *The Lesson Applied*, have been provided to clinch what has been presented for study. The teaching form of

FOREWORD

IN the late summer of 1919 the section of Psychology Instructors of the Massachusetts State Normal School Teachers Association, in session at Bridgewater, Massachusetts, raised their voices in a united plea for textbooks in psychology which should be more within the range of young teachers-in-training than is true of most texts in this subject now available. That plea is, in part, the justification for the addition of the present book to the already large number of texts in psychology which are on the market.

The experience of several years in offering courses in professional subjects to teachers in training has demonstrated to the author of this manual the tremendous need which exists for inclusive texts in psychology that are adaptable to training school work. It is my frank opinion, checked up by that of a goodly number of my colleagues in normal school work, that there are very few textbooks indeed at the present time which meet the needs of training school classes in psychology. In a very special sense normal school psychology must be highly practical, highly workable, and highly understandable. There is no time in our two year courses for laboratory experimentation, much as we ought to have it, nor for going into theoretical or controversial territory. What we need and must have is a psychology stripped naked of all needless technicalities, disentwined from all irrelevant supposition and theorizing, and articulated as closely as possible with the schoolroom situation. There is no time for incursion into any of the enticing psychological byways, fascinating and suggestive as such inquiry might be. Rather, the psychology of the training school must fashion and temper a practical tool for the hands of the teacher-craftsman.

The general psychology found in the ordinary college curric-

ing the number of references for further reading. Only the most directly related psychological literature has been cited, and it is highly desirable that the students be required to familiarize themselves with every reference given. In no other way can they cover in anything like a satisfactory manner the minimum essentials of psychology for teachers of children.

Finally, in order to derive the fullest returns from the use of the manual, the students should be expected to study children extensively and intensively. Throughout the entire course in psychology they should be required to make such free observations as will to some degree at least parallel the classroom work, thus not only rendering themselves more familiar with the behavior of children under various conditions, but at the same time supplying as it were the illustrative material for the class discussions.

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PSYCHOLOGY FOR NORMAL SCHOOLS

LESSON 1 INTRODUCTORY

What to look for in the observation period:

1. Evidences of behavior as it is defined in this chapter.
2. Greater complexity of response in older than in younger children. Try to classify several groups of responses in the observation class under the groupings thinking, feeling, and action.
3. Children whose environment outside of school may be unfortunate.
4. Any evidence that the teacher is endeavoring to select from all possible influences of schoolroom living only those which may have a beneficial influence over the behavior of the children.

What psychology is. Psychology is the science which seeks to enumerate the chief facts of human behavior, with an attempt to account so far as possible for these facts. You have observed constantly in your daily associations with people that human life tends to express itself in terms of thought, feeling, and action. We may include all three of these types of expression under the single heading: behavior. Let us endeavor to analyze this word behavior.

Behavior. But do not make the mistake of interpreting behavior in terms of its everyday significance. In popular phraseology, to behave means to conduct one's self in an exemplary manner. In psychology we must give the term a much broader significance. Behavior may be defined in this more inclusive sense as *the response of our organism to all the situations which confront it or can ever confront it*. In the following paragraph we shall see what some of these everyday responses are.

The infant stretches out its hands to grasp the toy, it follows with its eyes the movements of the mother about the room, it coos with delight when it is comfortable, it screams when it is uncomfortable, it tries to place small objects in its mouth, its face shows fear when it is tossed into the air, its cheeks suffuse with anger when its privileges — real or fancied — are interfered with, it clings to the mother and shrinks from the stranger, it babbles and lisps incessantly during waking hours, it keeps its arms and legs in more or less continuous motion, it manifests unmistakable symptoms of jealousy whenever another child is vouchsafed favors which it deems due only to itself, it creeps across the floor, when it is old enough, to explore a tempting object near by, it throws its toys gleefully from it, and then proceeds to recover them almost immediately, its gaze is caught now by a sunbeam shimmering upon the floor, now by a bit of bright cloth, now by the charm dangling from a watch chain, it stretches out its hands with equal conviction toward the moon or the star or its own face reflected in the mirror, it pulls its toys to pieces in order to investigate the fascinating mechanics within them, it plays with its pets often becoming very rough, and with unhappy consequences, it claps its hands ecstatically when especially delighted, it plays with its own toes and fingers and clothing, it pouts and laughs and cries by turns, it alternates short periods of waking with longer periods of sleeping, it is now fretful, now cheerful, its attention remains but fleetingly upon any single object, seeking ever new experiences. All of these common responses which you have observed again and again in infants in your own home or in the home of a friend belong properly within the meaning of the term *behavior*, as we have defined it above.

Behavior becomes more complex with increased experience. You must also have observed that the older the infant grows the more active, or *expressive*, it becomes. In earlier infancy its responses were very limited. Can you tell why? But as it passes out of infancy and into early

truths underlying all response, all behavior; it acquaints her with some of the tremendous influences upon the behavior of mankind that are as old as the race itself. And in the second place, the study of psychology is of significance for teachers in that it is not satisfied merely in discovering or stating facts and principles of human conduct, it is concerned also with searching after the reasons or causes underlying them. Hence universal causes or stimuli are come upon which, being observed to be true of those about us, may be assumed to be true of children generally.

One of the chief ends of the study of psychology by teachers is, therefore, that they may derive from it trustworthy suggestion and assistance in influencing favorably the responses of children in their own schoolrooms. Psychology would both inform the teacher of the nature of the child mind, and also aid her to direct its unfolding with intelligence and sympathy.

As a natural consequence of the study of human behavior, and the forces from which it evolves, the teacher will come to understand that whenever the moulding forces and examples making up the environment of a child are unfortunate or vicious, the behavior of that child will be shaped accordingly. Similarly, she will discover that the reverse is true, and that moulding forces that are favorable will tend to exert a salutary and beneficent influence over the behavior of children.

*TOPICS FOR SPECIAL STUDY AND REPORT

1. What is meant by *behaviorism*? What is the relationship between behaviorism and psychology?
2. Observe an infant for ten minutes, paying special attention to his responses of action. Make a written report of your observation.
3. What years of life mark the limits of childhood? Of infancy?
4. Why are the responses of infancy more limited than those of later life?
5. What are some possible consequences of unfortunate influences in childhood? Of good influences? Be concrete in your discussion. Can you furnish actual illustrations from your own experience or observation?

LESSON 2

METHODS OF STUDYING CHILDREN

What to look for in the observation period:

1. Any evidences that the teacher, as judged by the sympathetic attitude which she maintains toward the contributions that the children make to the lesson, is a good introspectionist. Is there, on the other hand, any evidence that she is the sort of teacher whom James had, as described in the Lesson?

Behavior not a narrow term. We learned in Lesson 1 that behavior is the response of the organism to the influences with which one is surrounded. In this lesson we are to consider some of the major ways of studying these responses. Before proceeding to do so, however, it is essential that we appreciate thoroughly the point of view that behavior has as much a mental as a physical phase, and as much a moral as a mental one. It is evident, therefore, that logical thinking or keen imagining are just as truly types of behavior as are building a snowman or playing "Indian," and that telling an untruth or destroying the property of others is no more truly an aspect of behavior than is memorizing a poem or sailing a boat. In other words, as we have already seen, behavior is concerned with every physical, mental, or moral reaction made by the organism in a lifetime. Psychology seeks merely to analyze and to endeavor to account for them. There are several ways of studying these responses, but we shall limit ourselves throughout this discussion to the three methods which can be used with most profit in the study of child mind. These are, introspection, experimentation, and observation. To consider each of these three methods briefly.

Introspection. Suppose you are standing before a painting of rare execution in an art gallery, such, for example, as a landscape of Corot or Raphael's Sistine Madonna. Suppose

control over and understanding of children by the ability to evaluate a definite situation in the light of your own past experiences in a similar situation. For example, at a certain period in the lives of young people there arises a deep interest in collecting. It may be in collecting stamps or coins or post-cards, or it may be in collecting shells or milk-bottle caps or button-pins. Through introspective memory of your own earlier interest in such activities you will be in a position to guide the collecting interests of your pupils far more intelligently and sympathetically because you have learned to know yourself and your own childish interests and ambitions. Introspection, in other terms, makes a better teacher of you by making you a better observer of children and a more intelligent participator in their joys and sorrows.

Perhaps the following illustration will make the point clearer. In a certain country school, located in the heart of an old Indian region, a teacher was recently conducting a lesson in United States history. There were some half-dozen or more boys and girls in the class, of an age somewhere in the neighborhood of ten years. Toward the end of the lesson the discussion turned upon the types of weapons and other means of defense used by the colonists to protect themselves against the Indians. In the textbook were illustrations of matchlock and flintlock guns, an old block house, and some Indian bows and arrows. Eagerly one of the boys in the class raised his hand. For a time the teacher seemed to avoid looking in his direction. It may have been intentional on her part, for she was perhaps aware of the child's deficiencies and had no wish to exploit them before a visitor. But his insistence was so obvious and compelling that at length she was obliged to give him permission to speak. "Well, James, what is it?" James excitedly pointed to a picture in the book. "My father's got one of them guns up in our shed-chamber!" and the boy's face was aglow with conscious pride. But the teacher gasped. "How often must I tell you, James, to be careful of your English!"

That was all; not a word of acknowledgment or recognition of James's contribution to the lesson! Poor James shrank down in his chair, the eagerness of a moment before submerged in a deep hurt that was plainly apparent in his drooping head and ashamed face.

Now you will understand better why introspective cleverness is a virtue on the part of a teacher. James's teacher was not an introspectionist; she failed to see behind James's ungrammatical response the real impulsion that motivated him: she saw not the thing that James saw, but only the poor language in which it was couched. Her experience was too meager, and her memory of it too unreal, to enable her to appreciate and sympathize with the interests and longings of her pupils. By all means, then, beware of the failure of James's teacher. Cultivate this habit of analyzing your own mental processes to the end that you may better interpret those of the boys and girls for whom one day your cleverness in understanding will mean not only happiness, but mental growth and steady unfolding as well. Especially will you find it valuable to reminisce, so that you can reinterpret the experiences of your own childhood and turn them to account in your teaching of other childhood.

Experimentation. You recall readily enough from your study of general science that whenever you desired to analyze a chemical process you subjected that process to laboratory experimentation. Similarly, you were able to demonstrate a certain principle of physics to be true by regulating the conditions in such a way that it could be established at will. Now in psychology there are also immense possibilities in the field of experimentation, although for the same reason that makes introspection difficult it is not quite such a simple matter as might at first appear. Still, by carefully controlling our experimentation, and so ruling out all irrelevant or variable conditions, we can test out in the laboratory extensively what individual introspection can only demonstrate to be true of one

person — the subject. In the laboratory we can reproduce a given set of conditions at will, and so make possible a much wider and more extensive inquiry into human behavior. The number of subjects is conditioned only by the number of persons available for the experiment. Thus, by increasing the number of subjects, we can arrive ultimately at facts concerning human behavior generally which bear the stamps of scientific exactness.

For example, suppose it is desired to determine the most economical method of learning a piece of poetry. It may be the belief of A that the *m* method is the superior one, while it may have been B's experience that the *n* method is more economical than the *m*. By ruling out all variable factors and establishing a set of constant conditions we can subject the difference of opinion to a definite test in the laboratory, and by multiplying sufficiently the number of observers or subjects we can determine not only which method of learning is the better for people in general, but we can also classify all observers, and therefore all learners, into their respective categories.

For the average teacher-training course, however, it is found usually that there is not sufficient time to venture far into the field of experimentation, fascinating though it undoubtedly is. Indeed the technique of psychological experimentation, while distinctly invaluable as training for advanced work in the study of human behavior, is not indispensable for the teacher of children. Hence we shall confine ourelves in this book with the minimum of experimentation, remembering, however, that experimentation is possibly the most exact of all the methods of psychological research.

Observation. The method of studying behavior which above all others is adapted to use with young people is the observation method. The material upon which as master craftsmen we are to work consists of children. This material is fortunately everywhere about us. We are not compelled to make either effort or sacrifice to obtain access to

it. It is to be found in quantity in the homes, upon the playgrounds, on the streets, and even within the school-room itself. We have but to observe it.

Now you may have discovered already that not everybody is an accurate observer of the common incidents and objects in his environment. It not infrequently happens that two people react quite differently in their descriptions of a happening, or of a place or person or thing. The following illustration will serve to throw this strange fact about human behavior into relief. It chanced recently that an automobile crashed against a telegraph post at the foot of a rather crowded street. In the accident one of the occupants of the vehicle was very seriously injured, and subsequently succumbed to the shock received. The court which tried the case desired to establish the guilt or innocence of the driver of the automobile. But when the witnesses were summoned a curious lack of unanimity of impression was revealed. One witness stated that the automobile was being driven at a speed of approximately thirty-five miles an hour; another declared the speed to have been not in excess of fifteen miles an hour. One witness claimed that the injured occupant was hurled through the windshield and dashed to the ground; another declared that he was not thrown from the vehicle at all. All of the witnesses, notwithstanding, made their statements under oath. It is apparent that not all of them were accurate observers. It should be said in partial justification, however, that impressions made under stress of strong emotional experience, as was true of the accident described, are apt to be untrustworthy. Still, the fact remains that not all observers are dependable observers.

Powers of observation are fortunately trained with practice in observing. In a certain school building, over the main entrance there is a window of peculiar shape and arrangement of panes. It is semicircular in form, and glazed with red and colorless panes of various shapes and proportions. One day the teacher asked the children to draw from memory a diagram of the window. The most unreal and

fantastic designs were produced. Next day the same request was made, and this time the children — most of whom had taken pains to observe the window more closely in the meantime — did much better. Still, few of them had yet observed the window accurately. But day after day the teacher repeated the problem until soon every child could reproduce very creditably on paper the shape, proportion, and relative size of parts of the entire window. Their powers of observing were improving with practice.

Things to be borne in mind in observing. There are several things to be borne in mind in observing children methodically, and it will be well here to make brief reference to some of the more important of them.

(1) It is always the simple and natural reactions of children that are most valuable in furnishing us information about children generally. It is quite possible, of course, to encourage artificial or *controlled* response by injecting one's own personality prominently into the situation. For example, you might ask a six-year-old child whether it is wrong to tell a lie, or what his ideas of angels are, but there would be great danger of suggestion or constraint, inducing the child to respond more or less unnaturally. It would furnish a much more reliable side-light upon the moral natures of children merely to *observe* their behavior without introducing one's self too prominently. Be on the watch, then, for the free, spontaneous responses, rather than the controlled or artificial ones. You can obtain the sort of observations you are in search of, often, by stealing upon a child much as a hunter steals upon his prey; watch him from ambush, taking great care not to startle him; observe him with his playmates, or alone with his imaginative self; peer out upon him at his play or at his work; in short, keep him within range during the whole period of his waking life, and even during the drowsy sleepy-time you can lie greedily and eagerly in wait in the shadows of the nursery. Any effort, you will soon find, which you may feel disposed to make will repay you a hundred fold.

(2) Be cautious in not allowing the child to suspect your intentions. If he has any reason to doubt the disinterestedness of an onlooker he at once becomes an artificial character. It happened, for instance, not long ago that a group of young women students, after receiving scant preliminary instruction in the technique of observation, sought out a group of children and, pad and pencil in hand, began to quiz them with all manner of questions! Fancy the response which such a method elicited from the long-suffering boys and girls! These students, you see, were learning from experience to observe properly, as we have intimated above all teachers in training have to do.

procedures has distinct value. In the first place the long continued intensive study of a single child will afford the student excellent opportunity to note the progress and changes which mark the child's development and she will perhaps gain more systematic insight into the nature of behavior than she would acquire from the incidental methods. Secondly the study of groups of children will demonstrate to the student not only the operation of certain of the social instincts but also will operate to reveal to the investigator something of the psychology of individual differences of which we shall have more to say later. In the third place the incidental method of studying a single child who chances along has the advantage of requiring less time and of offering a wider probable range of behavior to observe.

(5) Finally, the observation of children is worth while only in so far as, like every other subject of investigation it is entered into earnestly and inquiringly for the purpose of actually getting information. The true scientist sets about his tasks without any preconceived notions desirous of arriving at facts. This should be your ideal in the work which you are undertaking.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Why do witnesses of the same event frequently disagree? Can you illustrate the phenomenon from your own experience?
- 2 Select some object from your environment during a quiet hour such as a picture or a landscape and try to introspect. Report your results in writing.
- 3 Whenever you chance to find yourself in a fit of anger or under stress of fear introspect carefully with a view of determining the structure of your consciousness.
- 4 Ask a friend to select from a magazine a colored picture possessing considerable detail. After you have carefully studied the picture have the friend question you concerning its details colors etc. Report the accuracy of your observation.
- 5 Review Miss Shinn's *Biography of a Baby*. This will give you an excellent idea of a careful study of a single child over an extended period of time.

THE LESSON APPLIED

1. Can an unimpassionate teacher be conspicuously successful in reaching and moulding the lives of boys and girls?
2. If it is true that the observational powers of the average adult are apt to be wholly undependable, what should you infer to be the case with the fidelity of children's observation?

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LESSON 3

THE NERVOUS SYSTEM STIMULUS AND RESPONSE

What to look for in the observation period

1. Evidences of distracting stimuli in the schoolroom, and the responses in the children which they arouse
2. Whether such matters as the location of the school building, arrangement of rooms, etc., show any indication of attempt on the part of school authorities and architect to rule out as far as possible all distracting stimuli.

The cell the unit of all living matter. You will remember from your physiology that the unit from which all organisms and all parts of organisms are evolved is the cell. It will perhaps be well, before we continue our inquiry into the nature of human behavior, to review very briefly the chief facts concerning the relation of the cell to the nervous system and of the nervous system to behavior, for it must have become apparent to you by this time that the pathway across which our human behavior finds expression lies within us. This internal pathway is by no means a single route, but is made up of a great network of nerve cells and their processes which penetrate to every part of the organism, and link the parts up in such a way that unity of control results. For the purposes of clearness we may liken these nerve routes to microscopic telegraph wires running through innumerable relay stations.

The structure of the nervous system. The unit of the nervous structure is the *nerve cell*, just as the unit of bone structure is bone cell, or the unit of skin structure the epithelial cell. This nerve unit or nerve cell is essentially similar in structure to the bone or epithelial or other cell. That is, it contains a *nucleus*, a mass of *protoplasm*, and a *cell wall*, the whole mass being microscopic in size. Project-

ing from the cells proper are multitudes of prolongations to which are given the name *nerve fibers*. Most of these protoplasmic prolongations branch and subdivide indefinitely; these branches are called *dendrites*. A few of them do not present such marked arborization and are much longer than the dendrites; they are called *axons*. The complete nerve unit — i.e., the cell and all its branches — is called a *neurone*. These neurones, of course, are microscopically close together, and their processes or fibers interlace not unlike the upper foliage of juxtaposed trees. The *synapse* is the region where the branchings from one nerve cell appear to join other branchings from a similar unit. Whether there is any actual physical junction does not concern us here. It is sufficient to understand that in some way impulses traveling along one nerve bridge the gap, or synapse, and continue along the appropriate neighboring nerve until the end desired is attained.

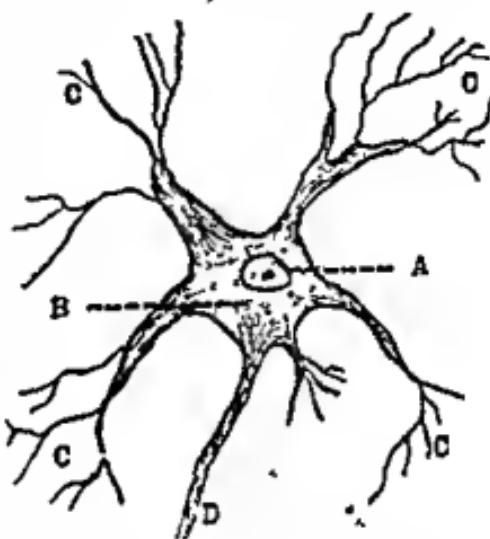


FIG. 1 A NEURONE
Showing dendrites and part of axon. A is the nucleus, B, the protoplasm. C, dendrites, D, axon.



FIG. 2 A SYNAPSE

bridge the gap, or synapse, and continue along the appropriate neighboring nerve until the end desired is attained.

For the most part the nerve cells are grouped together in the *central nervous system*, that is, the brain and spinal cord. Occasionally, however, smaller masses, called *ganglia* (singular *ganglion*) are juxtaposed in other parts of the body where they can more conveniently control certain physiological functions.

The function of nerve fibers. In general the nerve fibers have three functions to perform in the physiological furtherance of behavior. One group, which we may call *afferent fibers*, are for the purpose of receiving messages from the exterior sense organs, although many of them come from the internal organs of the body. The function which afferent fibers have to perform is, therefore, the first step in the initiation of reflex action and of sensation, externally or internally aroused, since it is these fibers which transmit outer or internal impulses to the interpretative centers within the gray matter. We shall see in a later lesson just what we mean by reflex action, and how the afferent fibers can arouse both it and conscious response.

A second group of nerve fibers, called the *efferent fibers*, are those prolongations of the nerve cells which convey messages away from the nervous system and into the muscles and glands, resulting in movement or action. The efferent fiber is, therefore, the last nervous step in the production of reflex action; it is also the logical avenue through which the results of sensations are discharged into action or response. The efferent fibers terminate always in muscles or glands.

Supplementary nature of the afferent and efferent fibers. We are in a position now to understand the supplementary nature of the afferent and efferent fibers. According to their derivation from the Latin, afferent (*ad* and *ferre*) implies carrying toward, while efferent (*e* and *ferre*) implies carrying away from. And this is precisely the significance of the two terms as used in the nomenclature of the nervous system. One group brings sensations in from the exterior, while the other group projects movements outward to and about the exterior. The first group are, therefore, *sensory* nerve fibers; the second group are *motor* fibers. Take a very simple example of nervous response by way of illustration. Suppose a few grains of pepper are blown past the nostrils. Immediately you respond by sneezing — it may be several times. What has actually taken place is this: a small group of afferent fibers ending in the nasal passages has been

skill of the muscles, but especially of the association neurones which, on the higher level of intelligence and will, represent the great physiological foundation of human consciousness and behavior.

Stimulus and response. We have had occasion frequently thus far to refer to outside influences or forces playing upon us in determining our behavior. It is time now for us to become familiar with the terms *stimulus* and *response*, and to employ them henceforth in our discussion of behavior. In the example just given, the particles of pepper floating about in the air may be said to have been the stimulus which caused us to sneeze, in the same way the act of sneezing may be said to have been the response which we made to the stimulus. We assume, of course, that the connection between the stimulus and the response was effected by the adjustor neurones, but in our observation of children we are particularly concerned with studying the stimuli which influence them and the response which they make to them without attempting to trace internally the physiological circuits of their responses. Given the stimulus and the response we can calculate the part played by the adjustor mechanism with sufficient accuracy for our purposes. Let us look at some other illustrations of this same process of stimulus and response.

Illustrations from infancy. When the mother moves about the nursery the eyes of the infant follow her wonderingly. Her movements are the stimuli which produce the response—turning the head about. The same stimulus may also cause the infant to smile or cry, to prattle contentedly or to cower back in alarm, or to express itself in many other ways. The opening of a door becomes the stimulus that causes it to respond by turning its eyes in the direction whence the sound comes; the sight of a toy impels it to stretch out its hands to grasp it; the lullaby song produces drowsiness and perhaps even slumber, the passing cat causes a hand to be outstretched to feel or caress it, sight of the bottle may precipitate a great number of responses, all concerned with the

taking of food; uncomfortable clothing incites to fretfulness, as do also indigestion and physical ills. Can you extend the list?

Illustrations from adult life. A loud explosion causes you to jump, and perhaps cry out; a flash of lightning may impel you to close your eyes tightly, or to tremble in fear, or to indulge in compensating jest; a bitter or sour taste is reflected instantly in a wry face, as is also an unpleasant odor; a pin prick causes you to straighten up quickly, and perhaps put the injured finger in your mouth; a thrilling discourse or sermon may incite you to this or that course of action; an interesting story will find unmistakable expression in your face, as will also an uninteresting one; a good example at a fortunate moment will encourage you to react creditably to a vexing situation. Try to think of a great many other illustrations from your own everyday experience of the inevitable sequence of response from stimulus.

Professor James has very aptly applied the antonym *impression* and *expression* to such situations as mentioned above. Can you justify his statement to the effect that

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Another pair of antonyms frequently applied to *afferent* and *efferent*, or *sensory* and *motor*, are *centripetal* and *centrifugal*. Account for the fitness of the two terms.
- 2 Write out and bring to class a possible explanation of the activity of the sensory motor arc in coughing, or in winking the eyes when a foreign body is precipitated near them.
- 3 Observe an infant for ten minutes and report upon his responses.
- 4 Be ready to place on the blackboard and explain a diagram illustrating the reflex arc.
- 5 Study pages 26-28 in chapter 3 of Wm. James's *Talks to Teachers*, etc. Do you find confirmation of what you have studied in this chapter? Explain.

THE LESSON APPLIED

- 1 Every stimulus results in some manner of response. Can you think of any stimuli in the schoolroom which might tend to produce undesirable responses or to interfere with the fixing of desirable ones?
- 2 Would it be probable that the responses of pupils to a lesson which was lively, snappy and interesting would be more valuable than might be the case with a lesson that dragged and was uninteresting? Is interest, then, an essential if responses to stimuli are to be most enduring and worth while?
- 3 To what extent is it an essential to unhampered and appropriate response on the part of a pupil that the terminals of all afferent fibers (i.e., the sense organs) be functioning normally?

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- 1 Angell, J. R. *Psychology*, chap. 2
- 2 Stiles, P. G. *The Nervous System and its Conservation*, chap. 2
- 3 Watson, J. B. *Psychology from the Standpoint of a Behaviorist*, pp. 8-15

LESSON 4

LOWER FORMS OF BEHAVIOR

Irritability of plants and lower animal organisms. It is well to pause here, before continuing our inquiry into the nature of human behavior, to refer briefly to some of the responses of lower forms of life; for behavior, in the sense of response to stimuli, is by no means limited to human beings. The sense organs of animals and the external surfaces of plants are alike subject to *irritability*; i.e., to stimulation arising from certain surrounding forces. Davenport classifies these forces as follows: (1) chemical substances; (2) water; (3) density of the medium; (4) molar agents; (5) gravity; (6) electricity; (7) light; and (8) heat. In other words, whenever an irritable organism is subjected to stimulation from any appropriate one of these eight agencies, it responds in a definite way. This response is a form of behavior, whether it be a response made by a plant or by an animal organism.

The tropism. The reactions made to external stimuli are far less complex in these lower forms of life than they are in human beings. The reason for this is obvious, since the responding apparatus — i.e., the nervous system — is highly specialized and highly complex in the latter, whereas in the former there is either no distinction between the afferent and efferent elements, or else the connection between the two is physiologically immediate and direct. For example, the slow turning of the sunflower to the progress of the sun across the sky is after all probably a relatively simple process, owing to the relatively simple structure of the sunflower.

The term most generally applied to such direct responses as these is *tropism*, a word coming from a Greek infinitive meaning *to turn*, and indicating in its derived significance all possible lower forms of response to the eight agencies men-

tioned above. A few illustrations of tropisms will make the matter clearer.

Phototropism. In the case of the turning of the sunflower always toward the sun we have an instance of what may be called *phototropism*, or turning toward the light. It is more correctly called *heliotropism*, or turning toward the sun. The stimuli are obviously the sun's rays, while the response, made possible by an irritable organism previous to the chemical influence of the rays, is the constant turning. Another illustration of phototropism is seen in the moths which fly at night. You have seen scores of them attracted around the illuminated bulb, and perhaps even into the open flame to their own destruction. The explanation here is, as in the case of the sunflower, that the chemical elements of the moth's organism are responsive to the light rays from the lamp. In this case the tropic response may be positively injurious to the life of the species.

Geotropism. Another interesting variation of tropic response is found in *geotropism*, or the tendency of certain organisms to move toward or away from the earth. The first of these, the tendency to move toward the earth, is known as *positive geotropism*, while the tendency to move in the opposite direction has been called *negative geotropism*. Suppose, for example, you plant a seed in the ground. In a few days you will find the tiny shoots of the stalk pushing their way upward. If now you dig carefully around the plant you will find that its roots are burrowing deeper down into the earth. The first of these responses is an illustration of negative geotropism, while the second illustrates the opposite, or positive geotropism. It will be idle for us here to inquire into the explanation offered to account for the negative response, which appears to be a reversal of the law

help you to understand that the eternal law of stimulus and response, about which we studied in Lesson 3, takes its origin far down in the biological and botanical series, and is a form of inevitable behavior as old as the cell itself. Human life, or human behavior, represents merely a more complex and variable range of responses, due as we said to the interposition of a complex nervous system and the increased possibilities of reaction thereby made possible.

Automatic acts. It is true, however, that there are certain invariable forms of reaction to stimuli, even in animal life on the higher levels, which are more or less in the nature of determined responses; i.e., which appear as the inevitable reactions to certain stimuli and so are little higher than tropisms in degree of complexity. In fact, physiologically, about the *only distinction* between the tropic responses of the lower forms of life and the simpler responses in the higher organisms lies in the fact of the greater specialization of structure and muscular or glandular function in the latter. In the tropisms there is no evidence either of specialized function or of nerve tissue, the response being, as we said, a simple, direct, and inevitable adjustment due to chemical irritability. In human beings, however, and in animals generally, are going on certain internal processes over which the brain exercises no control and which are in full operation from the earliest days of life. These are the so-called *automatic acts*, and include all such bodily functions as digestion, secretion, breathing, circulation of the blood, etc. Such acts result from internal stimuli rather than from chemical forces external to the organism, as was true of the tropisms, and have as their chief function the preservation of the physiologic processes upon which life and health are dependent. They represent, however, an aspect of response considerably higher than the tropism inasmuch as they are dependent upon relatively complex nervous structure for their operation.

Reflex acts. A second type of human behavior on a low level may be included under the term *reflex action*. In this

response the stimuli are external to the organism rather than internal, and produce periodic responses which are beneficial in protecting it from injurious forces originating outside of it. Among the more common reflex responses may be mentioned the winking of the eye to protect it from impact with a foreign body, sneezing, coughing, and the like. In the case of winking the eye, for example, the stimulus from without may be a particle of dirt, or an insect, or a chip flying toward one. The response is as instantaneous as it is effective. The lids are drawn hastily down and the delicate membrane of the eyeball within is saved from injury. Or again, suppose the wink has not been quick enough, or the object approaching has been too small to excite the customary response, so that the foreign body actually gets into the eye. Immediately it furnishes the stimuli for plunging the muscles of the eyeball, as well as the neighboring facial muscles, into violent and persistent reaction until the particle has been removed by the action of the tears which have also been reflexly released from the lachrymal glands. In this and in other reflex responses the higher centers are not called into play, but the lower centers take matters into their own hands, as it were, and incite the muscular and glandular responses.

Both the above forms of behavior are relatively simple. The stimulus passes over directly into the response, the only difference being that in the automatic act it was an internal stimulus which set off the response, whereas in the true reflex the stimulus was supplied from the outside. But in either case it is the simplicity and directness of the ensuing response that are the important things: automatic and reflex acts travel as a rule across the simpler reflex arcs.

Instinctive response. But the sensory-motor arc is capable of transmitting far more complex responses than either the automatic or the reflex act. The next higher form of response is the *instinctive response*. Instinct is a very difficult term to define in its broadest and fullest significance. We may perhaps best describe instincts as being inborn ten-

LESSON 5

INSTINCTIVE BEHAVIOR IN ORGANISMS BELOW MAN

Present stimulus and past experience. We described instinct in our last lesson as an inborn tendency to react in definite ways to definite stimuli. This tendency is no more peculiar to the human than it is to the lower animal organism, although in the latter behavior is more or less limited by structure. It has often been pointed out that an organism's response must depend upon two factors — the present stimulus and past experience. Now in the case of all forms of life, higher or lower, past experience has been of tremendous importance. Take the bird family, for instance. We have no exact information as to how long birds have existed on the earth, but we do know that it has been a great many thousands of years, and throughout these long ages their organisms have been accumulating a vast fund of experience. We do not need to assume rational consciousness in the bird, however, to explain this slow and apparently purposeful accretion of experience. It is rather to be explained on the ground of natural selection. Suppose, for example, there had existed many thousands of years ago a large number of a certain species of bird. Suppose also that the climate of the region in which they lived suddenly became severe. Now doubtless many of them would have perished, but some of them, in flying blindly about, would chance to work their way into a region where the climate was milder. It is obvious that only such birds as succeeded in reaching a more equable climate would survive. The fact that they did succeed is to be explained on the ground of chance. But once having escaped the rigors of a cold climate there was doubtless registered in the nervous systems of the birds traces of their experiences, which natural selection seized

increasing coldness has in their emigration we do not know. At most it is only very slight as compared with the force exerted by inner necessity, based upon a long past. Often the same birds which emigrate in the fall immigrate again to the same locality in the springtime, and it may have been your observation that the same songster which built his nest in your back yard last year returned this spring to the same tree, and perchance even to the same bough. It is a sort of homing instinct which is more or less intimately associated with the migratory response.

Another instinctive form of response in birds is found in their nest-building. Certain species build always on boughs; certain others build under eaves or in vacant buildings; still others choose always the tall grass or the swamps. Can you explain why the selection of each of these different sites for nests may have originated many bird generations ago?

You have doubtless watched some industrious bird absorbed in his nest-building. You noted the care with which he selected the bits of mud, or dried grass, or straw, or twigs, and the skill with which he wove all his materials together into a comfortable nest wherein might be laid and hatched the eggs which were to perpetuate his kind. And year after year — always at the appropriate season — the same nest-building instinct comes to the fore again. Some all-compelling force, some dominant inner compulsion, actuates the behavior of birds in a special manner during the nest-building and mating season. The response is higher than the chemical response of the tropism, higher than the reflex, for the tropism and the reflex are immediate and direct. A relatively complex nervous system is rather the channel through which this bigger, instinctive response operates. The directness of the simple reflex arc is interrupted by the interposition of many finer afferent, efferent, and adjustor nerve elements which make for more mediate and prolonged action. The modifications wrought in the nervous system by past experience serve to complicate the nature of the response.

The Columbia River salmon. Professor Pyle records an especially interesting illustration of instinctive response as found in the life-history of the salmon. During the greater part of the year this fish haunts the region about the mouth of the Columbia River, but with the approach of the spawning season the fishes begin to make their way up from the ocean's mouth to the quieter, more placid headwaters of the river many miles inland, apparently that the young fish about to be hatched may be safe from the deep-river prowlers below. Now the smooth course of the Columbia River is frequently interrupted by cataracts and torrential waterfalls, down which the waters plunge seethingly. But the inner compulsion of the salmon is too great to permit of faltering. Gathering up all the energy in their muscular bodies they leap high upward out of the water in a blind endeavor to pass the foaming cataracts. If a first effort fails and they fall backward into the torrent, they swim idly about for a time in order to recover their energies; and then they make the great leap again and again until either they succeed in reaching the smooth water above or perish among the rocks and shoals of the rapids. It is said that at this season the Columbia is filled with the dead bodies of salmon floating down the river to the great ocean.

What shall we say of a strength, a persistence, a necessity which impels these strange fishes to jeopardize even their lives in an endeavor to reach the quiet headwaters of the Columbia? You can appreciate now something of the insuperable strength of the instincts in lower organisms, and how blind and unmodifiable they are.

Other common instinctive responses. But we do not have to go so far as the Columbia River salmon to find instinctive forms of behavior in the lower organisms. The self-preserved instinct, evident in the mouse scurrying to cover; the homing instinct of the pigeon or the horse; the food-getting responses of animals; the maternal instinct of the cow or the sheep or the mare or the cat; the play instinct in the pup or the kitten; the fear response of the fowl, hastening

into the bushes at the approach of a hawk — all these are common types of instinctive behavior. Can you think of any activity of animals that has other than an instinctive basis?

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Be prepared to discuss the theory of natural selection or the survival of the fittest (See reference 1, below)
- 2 Is the gang instinct, so common in boys, essential to the preservation of the race? Can you explain its origin?
- 3 What is the significance of the expression 'animal intelligence'? (See reference 2, below)
- 4 Give a possible explanation of how natural selection may have operated to impel the salmon to hatch its young in the headwaters of the Columbia River rather than at its mouth

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- 1 Jordan, D. S. *Footnotes to Evolution*, chap. 1, pp. 1-27
- 2 Morgan, L. *Introduction to Comparative Psychology*, chaps. 5, 7 and 20
- 3 Washburn, M. F. *The Animal Mind*, chap. 2

other forms of response which you make that are similarly the result of your own experience?

We shall consider this higher aspect of behavior in due time. For the next few lessons, however, we are to concern ourselves with the *unlearned, or innate*, tendencies which we classified in the last lesson as instinctive behavior, that is, tendencies to behavior which are handed down to us through the experience of the race as opposed to any ephemeral modifications which we may personally exert upon our behavior in our own lifetime.

We said in an earlier discussion that all behavior is conditioned upon two forces—the past experience of the organism and the present stimulus confronting it. The first of these forces in order of development must be the past experience, not of the individual but of the race. In other words, two factors go to make up the content of the past experience of any organism:—first, the contribution of the earlier progenitors of the organism, which we may call the 'race'; and secondly, the contribution of the present individual. Professor Thorndike includes all possible racial experiences, unmodified by training, as constituting the *original nature of man*. By this, he means the pure, naked, instinctive responses of the organism before they are in any way changed or modified by the experience of the present individual. One of the most interesting as well as the earliest of these original, or unlearned, forces in the human infant is the *tendency toward general physical activity*.

General physical activity. If you were to attempt to enumerate all the physical responses of an infant during an entire waking day you would find when night came that you had a very remarkable as well as a very extended list. Among the responses recorded would undoubtedly be the following: turning or shaking or nodding or tossing or wagging the head, turning the eyes about; exploring with the fingers of one hand the fingers of the other hand and the feet; grasping toys and small objects within reach; pulling, tearing, twisting, and folding paper; putting all manner of

physical activity is therefore based undoubtedly upon an earlier necessity in the life of the race.

Fundamental to accessory. An interesting question confronts us here as to the order in which these physical responses develop. According to the physiological principle which states that *all muscular control develops from the fundamental to the accessory*, which appears to be the commonly accepted explanation although it is variously interpreted, control over the larger movements precedes control over the smaller, more restricted movements, that is, the child learns to control the smaller muscles only after he has learned to manage the larger ones. It is very obvious, for example, that before you learned to play the piano with your fingers, you had first to learn to control the larger arm movements. If the happy chances to be brought near to the piano, it will manifest keen delight in drumming upon the keys with its fists, gracefulness and fineness of touch, however, will be as lacking as will critical appreciation of the sounds which are produced. We just said a moment ago that one of the characteristic physical responses of the infant in the cradle is the waving and tossing of its arms and hands in larger movements. True, it also fingers and manipulates its toys to a certain extent, but all its finger movements are awkward and ungainly in the extreme. This is, in itself, an illustration of the same principle of priority of muscular development. The same awkwardness in the development of the smaller, finer movements is seen in the growth of control of the feet. From birth on the child is more or less master of the larger muscles of his legs, which he can toss about incessantly, but it takes months of experimenting before he can learn to coordinate the same muscles in balancing, standing, and walking, and months more before he acquires much gracefulness of locomotion. The same may be said of his vocalization. From its first hour, the infant is able to produce vocal sounds without number or measure, but it cannot coordinate all its vocal potentialities into articulate speech for many months, and it is years before it becomes

complete master of its voice in all the niceties and finish of what we may call *speech*.

One other illustration will suffice. You may at one time have attempted to help a younger brother or sister to learn to write. If so, you can appreciate well how awkward and clumsy the child's hand is for many, many lessons, and how slowly it is that he succeeds in gaining a measure of control over the finer movements of his own muscles. During all this period of slow evolution, however, the same boy could doubtless run fast, play hard, and use his vocal organs to their very limit in the larger way.

To say, then, that the order of development of muscular control is from fundamental to accessory means simply that the larger, fundamental movements are the first in order of development, while the finer, more artistic, or necessary movements do not come under control until somewhat later. Do not confuse fundamental and accessory necessarily with the size of the muscles involved. It is not so much that the larger muscles come first under a reasonable degree of control; rather the larger, freer, less confined and restricted movements of these muscles evolve first. It is after all the same vocal cords, and the same arm muscles that come earliest under control as fundamentals that are concerned with later, finer responses as accessories. The change brought about by time and experience is brought about not so much by increased skill in using the smaller muscles (although in many cases that is a factor) as by increased skill in confining the larger movements into very minute ranges of contraction, as, for instance, in the case of learning to write.

Childhood an age of activity in the larger sense. You have frequently heard quoted the old Puritanic saw, "Children should be seen and not heard." As though a child, filled to overflowing with the instinctive necessity to act could ever be expected to do otherwise than express himself in terms of activity! Do not expect too complete physical control, therefore, from your children. It is just as natural

and just as necessary for the child to be heard as it is inevitable that he will be seen. Not repression, but better and more sympathetic means of expression are what children demand. This does not necessarily mean that noise and clamor are the only forms of response possible in order to satisfy the inner impulsion to general physical activity—although by all means noise and clamor are periodically essential to healthy childhood. They are a sort of safety-valve to the exuberance within. What it does mean is that we need to make greater provisions for self activity of children than we have felt needful in the past. Can you think of any recent developments in schoolroom practice which seem to indicate an increased appreciation of this need?

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 In what sense is unlearned behavior the learned behavior of the race?
- 2 Observe an infant for ten minutes bearing in mind what you have learned concerning the instinct of general physical activity.
- 3 Compare the duration of the period of infancy in the cat, bird, horse, etc., with that in man. What has been the reason for the increased length of the period in the case of the human infant?
- 4 How do skill or dexterity, or gracefulness in any art or industry develop?
- 5 Cite other illustrations of the fundamental to accessory principle.
- 6 What is meant by *self-activity*?

THE LESSON APPLIED

- 1 In what way is our knowledge of children's natural tendency toward physical activity being brought to bear upon schoolroom methods and educational aims? How have schools changed in this respect since our grandfathers' day?
- 2 Why is learning to write apt to be such a laborious process?
- 3 Why are drawing and manual training valuable subjects in the curriculum? To what end are such school activities as dramatization, pageantry, singing, declamation, etc., valuable in the training of boys and girls?
- 4 Is there any mental corollary to the fundamental accessory theorem? That is, do children grasp certain outstanding facts and principles before they can comprehend derived and intricate truths? Give illustrations.

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2. Thorndike, E. L. *Educational Psychology*, vol. 1, *The Original Nature of Man*, chap. 1, also chap. 10, especially pp. 155-58.

LESSON 7

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

2. The Migratory Response

What to look for in the observation period:

1. Whether there is any evidence that the children are making in connection with any of their studies "mental pilgrimages of the imagination" of the sort mentioned in this lesson.
2. Evidences of interest in the welfare of other peoples of other lands.
3. Any aspect of the school life as the children know and live it which might tend to induce some of them to dislike school and perhaps play the truant often.

The *Wanderlust*. We have already seen that the migratory instinct is a common form of response in birds. We are now to study evidences of the same response in human beings, and especially in children. This instinct has a periodic, seasonal appearance in birds, coming into prominence when the cold weather begins and recurring in the following spring when the north has become milder again. In human beings, however, the migratory response has to a considerable degree lost its seasonal aspect, and appears as a general and more or less permanent tendency to delight in migrating. *Wanderlust*, or love of wandering, is the very expressive term which the Teutonic tongue applies to this interesting form of behavior.

Early manifestations in infants. Its earliest appearance in children is seen as far back in the life of the babe as it begins to manifest eagerness to explore the wonderland beyond its own dooryard, and many a mother has called and searched frantically throughout the neighborhood in an attempt to locate the three-year-old who has for a moment been left without surveillance. You have observed the many ingenious devices to "hold" very young children in

captivity within their own homes, from the primitive cord attached about its waist and fastened to a doorknob, to the kiddie-coop or the piazza bars! But in spite of all this effort and solicitude on the part of the parents, the hahes often break leash and disappear from immediate view, for all the world like gleeful animals which have escaped from their keepers. Something of the same primitive delight in wandering is seen in the eagerness which infants and very young children manifest in being wheeled out in their carriages, although it is prohable that they are quite as contented in being trundled up and down and back and forth in the same familiar street as they are when being conducted along new and unfamiliar streets. The explanation here is partly that they enjoy the rhythmical motion of the carriage and the changing prospect, and partly that to their somewhat sluggish perceptions there are always sufficient new and novel stimuli even in the same short street.

Prominence in older children. But as the young infant grows older the strength of its migratory instincts begins to increase iaordinately, and sometimes alarmingly. You are familiar with Mark Twain's inimitable creations of childhood, Huckleberry Finn and Tom Sawyer, and you remember how one day, in company with a boon companion, they stole away from home to seek their fortunes on the great sweeping Mississippi. It was a response as natural and normal for boys to make as breathing. The lure of the distant, the enchantment of the new and strange, the call of the unknown and the untried are motives of enormous driving force in the lives of children, and especially, it appears, of boys. It may not find its expression in launching a raft on the Mississippi and sailing away to become huccaneers, hut some less spectacular form of expression it does seek. You are familiar with it in boys who run away from school, or "play hooky," a form of behavior springing quite as much from the inner call of the woods, or the field, or the stream as from lack of sympathy with the work of the school. You are familiar with it, too, in the frequent

recurrences in some children whom you doubtless chance to know of running away from home. Often this absence from the home may be of very short duration — perhaps an hour, two hours, half a day. Frequently, however, children with unfortunate home influences or bad gang influences may be missing for days, and even weeks. You have probably seen in the newspapers, on more than one occasion, accounts of some "lost" child who has heard and heeded the inner call of the distance. There are frequently cases of boys "jumping" freights, and actually visiting distant cities and remote parts of the country before they are apprehended and brought back to anxious parents.

But even in the case of those less impulsive children who neither run away nor "play hookey," but remain quietly and happily in their homes or schools, it is nevertheless true that the *Wanderlust* is every whit as strong. It seeks its expression, however, not in physical migrations and pilgrimages, but rather in mental pilgrimages of the imagination. I once knew of a boy who lived in a quiet country valley which was quite hemmed in by a very high range of hills. Often in his dreamy moments, when he had tired of his play, he would muse upon the sort of people who lived beyond the hills. In his fancy the boys and girls and grown-ups who lived on the other side must be quite different in their activities from the way of living with which he was familiar, and he dreamed of one day traveling beyond the hills and living among the enchanting people of his imagination. So it is with children. Books and tales of different places are always interesting to them; pictures of the children and people and animals of other lands enthral them; stories of travel and adventure hold them spellbound; and if their environment fails to satisfy them in providing such stories and pictures and tales their fancy comes to their aid and paints the great outer world in roseate hues.

Perhaps you can still recall your first long trip on the train. If you were six, or seven, or eight at the time, how wonderful the world appeared to you! And how deliciously

satisfying to your fancy were the swift-speeding cities and towns as you were borne hastily and enchantedly through them! Does not memory of that red-letter day still unfold to you like a happy dream?

Are adults subject to it? In mature life, too, it is not difficult to find evidences of the persistence of the migratory instinct. You may have heard of or actually known of families who were content in one street but a short time, and who were continually moving from place to place, and perhaps even from one town to another. In a similar way everybody likes to travel, either in the home country or in the countries beyond the ocean. It is a pleasing way of satisfying the migratory promptings within us, and we Americans are probably the greatest travelers in the world. It seems to be a law of life that those nations who labor intensely must also relax intensely. Yielding to the migratory instinct in this way is a pleasant form of relaxation. Then, too, there are the tramps, or professional wanderers, who have chronically given themselves over to the promptings and the inner strength of the *Wanderlust*, and find contentment only in seeking ever new scenes. In the gypsies we have the strange phenomenon of an entire race or tribe wandering always over the face of the earth, their home wherever their tents chance to be pitched.

Origin of the migratory responses. In primitive life, as we have already seen, those responses which are now instinctive were in some vital way necessary to the preservation of the race. It is easy to understand how essential the migratory habits were to the continued existence of the tribe. In an age when nothing was known of agriculture the food supply could be replenished only by seeking a new source. Hence, as rapidly as the edible materials in one locality were disposed of, it was necessary to move into more plenteous regions where the land flowed anew with milk and honey. The migratory instinct as we know it to-day is the trace left in the nervous system of the nomadic life which was necessary to the early development and perpetuation of the race.

Fundamentally then the *food motive* underlies this inner tendency in human behavior to day. It may be after we have studied the origins of some of the other great instincts that we shall conclude this same food motive to be at the basis of most human instinctive behavior. Was it so in the case of the tendency to general physical activity about which we studied in the last lesson?

TROPICS FOR SPECIAL STUDY AND REPORT

- 1 Recall instances of your own 'running away from home' when you were very young. What motives prompted you?
- 2 If there are older children in your home (i.e., children between say ten and fourteen years of age) observe whether any of their favorite stories are classifiable under the heading "travel stories" or "adventure stories."
- 3 Watch the daily papers for accounts of 'lost' children, and the possible motives underlying their "disappearance."
- 4 Do you know of any families who are very strongly possessed of the migratory instinct?
- 5 What do you know concerning the Bedouin tribes of the desert?
- 6 If people are subject to the *Wanderlust*, how do you account for the fact of their being homesick after they have left familiar scenes behind?

THE LESSON APPLIED

- 1 What would be some wise provisions on the part of teachers which might tend to turn aside the call of the *Wanderlust*?
- 2 Have such influences as school moving pictures, school libraries, etc., any restraining effect upon the natural thirst in boys and girls after adventure and excursion amid new scenes?

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- 1 Kline 'Truancy as related to the Migratory Instinct', in *Pedagogical Seminary* vol 5, pp 381-420
- 2 Norsworthy N. and Whitley, M T. *Psychology of Childhood* p 299
- 3 Thorndike E L *Educational Psychology*, vol 1, *The Original Nature of Man*, pp 55-57

LESSON 8

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

3. Food-Getting and Hunting Responses

Origin in primitive life. We suggested in our last lesson that the ultimate origin of the greater part of human behavior might be found to be connected with the response of food-getting. In primitive life, as we said, it was very necessary for man to lead a nomadic life in order to be always where the food supply was dependable. Not only must a sure and unfailling source of food be constantly in prospect, but once having arrived in a region of plenty it was necessary for man to experiment more or less in order to determine what plants or animals were good to eat. It is not unlikely that in the early history of the struggle for survival many human beings perished from the consumption of poisonous food. If so, natural selection permitted only those individuals who chanced not to eat the dangerous foods to survive, together with those who chanced to eat sparingly of them, suffered accordingly, but did not succumb as the result of the experience. It was always in some such blind, accidental way as this that the race in its infancy learned slowly to protect itself against the dangers that lurked on every hand. The origin of the food-getting instinct of children, which we are about to study, is to be found in the necessity which compelled primitive man to seek out and try all manner of possible foods.

Evidence in animals. If you are aware at all of the food preferences of animals, you are familiar with their remarkable keenness in analyzing available food particles. The horse, for example, nibbling the green grass, learns very quickly to avoid taking into his mouth the bitter dandelion or the tasteless herb, or, if he does chance to bite them off, he is

very adroit in spewing them out before they have had opportunity to become mingled with the sweeter grass in his mouth. In a similar way a chick will at first peck at particles of grit as well as of food, but very shortly will respond by refraining from pecking at anything which is of doubtful value as food. Now in both these cases the original tendency was to introduce almost everything available into the mouth, regardless of whether it could be assimilated by the system or not. The derived responses — i.e., the responses modified by experience — do not interest us at this point, for we are inquiring into the nature of the original food responses.

Survival in the human infant. In the human babe, well fed and surrounded with every physical comfort, this same food-getting response, though no longer necessary for survival, still persists. Sight of any small object, such as a toy, is the stimulus which prompts the hands to grasp it, manipulate it, and, very likely, introduce it into the mouth. Many students of childhood have observed that during the teething period infants are particularly eager to get hard objects into their mouths in order to assist in the eruption of the teeth. It is doubtful, however, whether this is the primary motive in the act of introduction. Thorndike suggests that the instinctive tendency to put things into the mouth is a response blended with the manipulative instinct.

But we are not so intimately concerned here with theories and explanations of origin. It is behavior itself which interests us. There seems to be no limit to the number or variety of objects which very young children try to introduce into their mouths. The response is apparent from the very first in the movements of the child's lips and hands to grasp the source of food. From this original appearance the response soon broadens out to include masticatory attempts upon a considerable number of objects, and for the first two years or so of the infant's life the mother has to concern herself very carefully with seeing to it that there is nothing

near the baby which may become for it a source of danger. Clothing, hands, feet, rattle, dolls, paper, corners of books, bits of wood, string, yarn, coins, thimbles, and a score of other things are grasped and carried to the mouth by the omnivorous infant. Sometimes, too, sharp or pointed objects may find their way into the eager mouth, and you have perhaps known or heard of babes who had actually swallowed a pin or a needle, with disastrous consequences. As a rule the habit of sucking the finger, observable occasionally in older children and sometimes in adults, originates in the persistence of the infant in introducing its fingers into its mouth. In order to satisfy this craving on the part of the inquisitive infant, one occasionally still finds mothers and nurses who provide so-called "teething-rings" for the soothing and satisfying of their babes! Why is the practice a pernicious one?

how-and-arrow age. It is a time when no available sources of strong hows and straight arrows are left unexplored. One of the most delicious of experiences which boys can possibly have on a Saturday or holiday afternoon, is the trip to the woods after small animals or "Indians." You have seen this same hunting response manifested in the great fascination which firearms possess for young people. If you were to question a goodly number of boys, eight or nine or ten years of age, as to what kinds of toys they prefer, probably you would find the bicycle and the air-gun occupying prominent places in their minds. It is not necessary actually to "hunt" in order to give expression to the "hunting" instinct. It is enough to build camps, or "shake-downs," or "lean-tos" in the woods, to haunt the groves, to play hide and seek, to shoot at targets with sling-shots or air-guns, or with stones, to delight in games of chase and pursuit, to lie in wait for one's chum behind a sheltering wall or fence and then to spring suddenly out upon him as he passes all unsuspectingly, to search after spruce gum among the spruce trees, to seek out the ripest berries or the shadiest grove—all these are variations of the hunting response in children. Is the response more common in boys than in girls? If so, can you tell why? Enumerate other examples of the hunting instinct.

In adult life the response still exists just about as strongly as it did in childhood. Witness, for example, the man who lives but for the annual return of the hunting season. Pause to consider how many deer and partridge and rabbits fall at the crack of the huntsman's gun every fall and every winter. It is the call within of the primitive, and the response to it is full-hearted and complete—not that there is need for game so much as that there is an inner deliciousness in tracking the animal into his lair.

In the lives of the animals themselves the hunting instinct plays naturally a very prominent part. In the case of the wild animals especially, food may be obtained by preying upon other and weaker or less fleet animals. It is nature's

eternal law of struggle for survival. What have you read concerning the method of hunting employed by certain wild animals? Even in the case of the domesticated dog and cat, both of which are well fed and do not need to hunt, it is the common observation of every one that the former prowls about walls and fields and marshes in search of wood-chucks, while the latter is the greatest natural enemy with which the rodents have to contend for survival. Thus, even in our more common domesticated animals of the lower orders, the call of the primitive is still insistent.

Origin of the response. The origin of the hunting response in primitive human life is quite apparently to be found in the continual searching after food which motivated primitive behavior almost *in toto*. As soon as the bow and arrow had been invented, man had in his possession a powerful weapon. Hitherto he had been obliged to depend upon either the strength of his muscles in a personal encounter with animals, or else upon the doubtful method of hurling rocks or stones among them or setting snares for them. But armed with the bow and arrow he could lie in wait and hope successfully to match his skill with the strength and agility of animals at some distance. The keen interest which boys manifest in hitting and throwing and shooting, as well as in the attendant camping and chasing and hiding, is rooted, like all other innate responses, in primitive necessity.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Observe an infant for ten minutes, paying special attention to its tendency to introduce small objects into its mouth.
- 2 Plan to observe carefully the people with whom you are associated throughout an entire day for the purpose of discovering whether it is common for adults to put pencils, penholders, and other small objects into their mouths while thinking or reading, or to keep their hands or fingers much of the time in the vicinity of their mouths.
3. Report on your observations of the hunting response in boys of your own neighborhood. Do the girls show tendencies toward the same sort of activity? If not, can you explain why?

- 4 Can you cite any evidence to show that boys are interested in bows and arrows, air guns, and other toy weapons?

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- 1 Lee, Joseph *Play in Education* chap 26
- 2 Thorndike E L *Educational Psychology* vol 1, *The Original Nature of Man*, pp 50-53

preciate better the great, impelling force of the collecting or ownership response in young children. The attractiveness and charm of collecting lie apparently not in the intrinsic value of the objects accumulated, but rather seem to reside in the sheer pleasurableness of owning and in the sheer pleasurableness of accumulating. If you will recall your own collections made in early youth you will probably agree that there was little real value in the objects themselves. You will recall also that the delight in collecting and the joy in exhibiting were extremely satisfying.

Stamps and coins. Perhaps one of the outstanding facts about children's collections is to be found in the wide range of objects which they embrace. Common among the articles collected universally by children are stamps. It would perhaps be difficult to determine in how far the collecting of stamps satisfies the collecting and ownership instinct merely, and in how far the migratory instinct is appealed to by the possession of stamps of other countries with strange faces or buildings or scenes engraved upon them, and hearing a language unknown and for that reason all the more interesting. Certain it is that both responses find satisfaction in the collecting of foreign stamps. But even the everyday home stamps offer an attractive field of effort, and you doubtless know of many a boy or girl who is anxious to remove the stamp from the incoming letter before even the postman has dropped it in one's eager hands. The writer knows two boys who have their regular weekly "soaking-off" day every Saturday morning, when all the accumulated letter corners of the past week are thrown into a pan of warm water and stirred about until the stamps can be satisfactorily slipped off the under paper. Following this process comes the "drying" stage, wherein the dripping, sticky stamps are spread carefully out on a board, face downward, to dry. After this process is completed they are deposited in a supply box until such time as they have accumulated into a sizable mass, when they are sorted and tied up in neat bundles containing one hundred each! What

dresses at least a dozen times a day, matching becoming hats to them, and crooning happily all the while, the days were all too short for her.

Of course real dolls are preferable to paper dolls, and often you will find girls seven to ten years of age who possess a score or more dolls in various stages of preservation and decay, yet equally loved within. One girl whom the writer knows well possessed at the tender age of eight years no less than thirty-two dolls, each one of which had a full name which she could properly call as invariably as she could the names of her playmates in the flesh. The fundamental instinct lying beneath this love for dolls is another which we shall study in due time — the maternal response — but in this case, as so often, the joy of collecting and possessing was so mingled with it that one could hardly say which was the stronger.

Development of the response. The first evidence of the ownership instinct comes with the cry (or the act) "Mine, mine!" in the very young child. Not infrequently the possession idea is so strong and so selfish that infants refuse to permit other children to touch or handle their toys, and take selfish satisfaction in enjoying them alone. This is especially likely to be the case in one-child families, where there is no common ownership of toys such as there is in families where there are several children. In the latter, incipient generosity may be noted in the comparative indifference on the part of all as to who owns the toys. Still, even in such cases, the instinct expresses itself in other ways, and rarely does one come upon a child who fails to pass through a distinct and long-continued developmental period in which one of the strong forces exerted from within is the passion to collect and to own. It may be nothing more than shells at the

velops with the dawning of childhood and childish interests. Led on in part by another instinctive force, curiosity, the collecting response comes often to occupy in a child's life, for months at a time, a most prominent place.

Nature collections. Occasionally, too, interest in nature exerts a profound influence over the collecting instinct. This interest impels the juvenile collector to hie him away to the woods or the fields or the parks or even into the back dooryard — and how much finer opportunity the country boy or girl has than the city child! — to gather and press daisies and violets and other wild-flowers; to seek out leaves of the finest texture, and all shades of green or glow; to chase the fleet-winged butterflies or to attract the larger, light-loving moths at night-time. One child dearly loved by the author had chased and mounted more than nine hundred butterflies and moths before she was fifteen years of age. And then there are the animals and insects in which boys particularly often manifest much interest. You doubtless know of many boys of your acquaintance who take great pleasure in their rabbits or white rats or tadpoles, or even grasshoppers and lightning bugs. It need hardly be said that collections of this sort possess a high educational value. If young people are made into nature lovers when they are young they will be likely to find in natural things an abiding satisfaction and source of enjoyment when they grow older. And yet, how few real nature lovers there are among children in these days of moving pictures and indoor amusements!

Quite apart from the educational significance of the collecting instinct, however, is the impulse to get, to obtain, to find out, to compare and contrast, to test and experiment, to search diligently and labor indefatigably. If in some magic way you teachers could seize upon all these internal compulsions of young people in your actual teaching, what transformations you would work in them! If you could command the hours of patient search and attention which they give freely and eagerly in their collecting, you might well be satisfied. After all, nature is the better teacher.

Young people are very active and very curious, — as we have seen; what greater driving force could one wish for?

Waning of the collecting passion. It is an interesting sequel to all this amassing of childhood's treasures that interest in them largely ceases with the coming of youth. Then the limited interests of childhood are swallowed up in the limitless horizon which opens to reveal the whole world to the eager gaze of the adolescent. There is always a tender spot in the heart for the pleasures and interests of childhood, but the wider interests of maturing perceptions and ideas come to take their places, and the individual *grows*. Only the sub-normal continues to play with his toys and trinkets of childhood. His normal, natural, evolving playmate puts away childish things and becomes, first a youth, and afterward a man.

Where did the instinct originate in primitive life? It is always an interesting inquiry to search after the origin of a response of the present individual in the past experience of the race. In the case of the instinct which we have been discussing in this lesson the genesis is as obvious as is that of the migratory response, or as that of the activity response, which we have already discussed. Possession meant, in primitive life, protection against famine as well as security from other tribes or from animals. It meant comfort and the means of safety. It was doubtless one of the first laws of survival that sufficient food must be stored up by an individual to last his family through chance seasons of famine and unwonted rigor. In a similar way the individual who was possessed of the truest arrow or of the longest spear — and the greatest number of both — was, other things being equal, the superior of any enemy who chanced across his pathway. So, too, collecting of legal tender used in primitive exchange was an important safeguard against suffering and privation. Fuel, skins for clothing, barks, woods, juices and pitches and gums, were indispensable in the life of early man. So in modern children, who are after all closest to the heart of the race, the same force impels

LESSON 10

INSTINCTIVE BEHAVIOR OF CHILDREN (continued)

5. The Gregarious Instinct: The Gang

What to look for in the observation period:

1. Whether there appear to be one or two or perhaps three boys in the grade who are "leaders" of the rest. If possible observe the organization of the children during the play period and note whether the leaders at play are identical with those who are leaders within doors.
2. Any evidence that the teacher endeavors to take advantage of these natural groupings in the management of the school, in the conducting of the lessons, etc.
3. Whether there is any more evidence of the gang instinct among the boys than among the girls.

Man's social predisposition. It seems to be human nature to shun solitude and to seek company. You are familiar with the *gregarious* tendency as experienced in your own dislike to be frequently alone, and your wish to have numerous friends whom you feel that you understand and who understand and sympathize with your own ambitions and ideals and aspirations. Many a time, doubtless, you have sought release from a lonely hour at home by standing at the window and at least seeing other people, or by actually fleeing from the empty house to the home of a friend or neighbor, there to remain until the absent father, or mother, or children come home again. And then how different the empty house seemed in the cheery glow of lamps and fireplace and the satisfying hum of voices. You have experienced the same loneliness perhaps in riding in an empty coach, or studying in a deserted library, or perhaps even in going from the city into the country. There is a joy in companionship or in crowds which one rarely experiences by himself. It is not always necessary to know the people about one, as for

and more especially in boys, that the persistence of the tendency is most obvious. The statement has been made on good authority that three out of every four boys belong to a gang at some time or other in their lives. Whether this percentage is constant or not, it is a matter of common observation that boys almost invariably move in groups. Unfortunately the nomenclature of the past has applied the term *gang* to any more or less nondescript group of juvenile or adult marauders whose activities were such as to cause society to frown upon them. In this discussion, however, it is essential that the term be understood in its proper psychological sense, that is, a group banded together for a common purpose, good or bad. As well call the migratory, or the hunting, or the collecting responses bad in themselves as to call the gang tendency bad. The gang instinct, like all instinctive forces, is in itself a beneficial and highly desirable tendency. It results in unfortunate consequences only when it misuses the normal impulses and turns them into undesirable channels of expression.

The constitution of the gang is always an interesting subject to contemplate. In general, as Puffer has shown, the gang age is from ten to sixteen years, with thirteen and fourteen the high-water mark. It is usually strictly a local affair, including in its personnel only boys living in the same street, or in the same square, or upon intersecting or neighboring streets. The youthful members are not particularly exercised as to the community of nationality represented, the Jew being as welcome to their fold as the Gentile, and the Irishman as the Finn. Very suggestive names are given to the organizations, and there is always a leader, chosen usually not because of any temperamental fitness for the high authority which he is to wield, but rather because he can run the fastest, tell the best story, or otherwise excel the attainments of his fellows. Without exception the leader is at once judge and court of final appeal in all matters of disputation arising within his organization, and as a rule the litigants religiously abide by his decisions and

findings. Sheldon finds the activities of the gang, from his study of 851 gangsters, to include athletics (60 per cent), migrations, i.e., building, hunting, fighting, preying (17 per cent), and social, secret or literary activities (only 13½ per cent). In his detailed survey of 66 gangs, Pusser found basketball and football occupying highest place in the list of gang activities; tribal industries, such as hunting, fishing, boating, building huts, playing Indian, etc., on the one hand, and stealing and injuring property on the other, enjoying second place; with such activities as fighting, swimming, migrations, running games, smoking, playing cards, skating or sliding, and drinking making up the full list.

in them of any very strong tendency toward gregariousness. There is no doubt, however, that girls go in groups or "sets" just as commonly, if not as boisterously, as do boys. Inasmuch, however, as boys are more ubiquitous, more inevitably seen, and less home-staying, we are apt to make the error of assuming that the more quiet and retiring girl is quite a different sort of creature.

Chumming. In either case, both boys and girls, in addition to their groups or "sets," usually have special chums who are most congenial and best loved. It is doubtful if there was ever a *real* boy who grew up without possessing a chum in another boy of the same age and of more or less similar tastes. The same thing is true of the girl. The "set" is indispensable and its associations are eminently satisfying, but there is a special sweetness in having one single friend of friends who understands one best, and whose ears and heart — and arms — are always open. Recollections of such comforting and trusting associations enrich and ennable the whole subsequent life of both individuals, and the chums of childhood are likely to remain the fastest friends of youth and maturity.

Gregariousness in primitive society. Beset as they were on every hand with dangers that they understood but vaguely, it was necessary for primitive men to band themselves together into tribes or clans or villages for purposes of protection. In union only was there strength. In most primitive society the tribe represented the unit of defense and offense, every tribe being a law unto itself. The tribe or clan lived together, fought together, and often fell together before the assault of a superior foe, for natural selection ruled early in human history that that tribe should survive which kept itself most intact and numerically strongest. In subsequent evolutions of communal living other interests than the totem-pole or the worship of a common ancestor operated to maintain the union of men in groups and to discourage living in solitude. This early social necessity is reflected in your modern gregarious instinct or gang response

THE LESSON APPLIED

- 1 If school children in the upper grades are naturally in the dawn of the social age, in what ways and to what extent should the life and activities of the school be organized on the basis of a miniature society? In how far are our schools already meeting this condition?
- 2 Is there any argument to be derived from the nature of the gang instinct in children against individual instruction and in favor of group instruction?
- 3 Does the presence of the gang instinct offer any obstacle to the teacher or is it rather to be considered a valuable ally?
- 4 What difference in teaching methods would you expect to find between the instruction of the kindergarten and that of an eighth grade class? Explain

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- 1 Lee, Joseph *Play in Education* chaps 39-40, and 41
- 2 Puffer J A *The Boy and His Gang* especially chaps 1-2-3, and 13
- 3 Thorndike E L. *Educational Psychology*, vol 1, *The Original Nature of Man*, pp 85-88

earnest about it, so loud and angry did their growling sound to you, and so long and sharp appeared their teeth as if buried in each other's necks. But they were not fighting; they were merely satisfying that tendency universal among animate organisms of the higher order to *play*. This same impelling force is to be seen in the young colt which gambols and frolics about the pasture or lot, as well as in the mother which, freed unexpectedly from her stall, runs madly across lots until she is breathless from the exercise. In the frolic of lambs and sheep, in the darting hither and yon of chicks after the fleeting insect or the disappearing worm, in the aimless flying about of birds in the tree tops and above the meadows, and in the habits of many of the wild animals at the zoo, the promptings of this same impulse to play are to be observed. It is an inner force universal among animals, appearing more marked in the case of those which have been tamed or domesticated and so require a considerable amount of activity over and above that needed in securing food to keep themselves in trim. The wilder animals of the forest and jungle have need to expend the greater part of their energies in obtaining food.

Play in adult human beings. The healthy, normal adult human being plays, also. The mere attainment of maturity is no evidence that the play impulse has been forever satisfied, it implies rather that the more thoughtful games or the sports requiring the keener judgment and skill can now be more thoroughly and completely enjoyed. Take, by way of example, our great national game of baseball. Rare indeed is the man who cannot make the necessary arrangements of his business to permit of his leaving it for two or three hours occasionally in order to be a spectator of a "game." Very often, too, groups of adult laborers organize teams among themselves which compete for the local championship, thereby giving themselves not alone the satisfaction of watching a game but also affording to many of their members opportunities actually to participate in it. This direct participation in some contest of speed, or strength, or

seventh year — as we have seen, individualism is more pronounced than socialism; that is, the inner satisfaction derived from intercourse with one's self is likely to be nearly as strong as the delight which comes from intercourse with the group. By this it is not meant that all children *prefer* to play alone during the early period, but that they find contentment in solitude quite as readily as when surrounded with other playfellows. Let us take a bird's-eye view of some of the well loved and universal types of play dear to the heart of the young child as the sunlight.

First, of course, will be the mud-pies! Can you recall the multitude of dishes and cans and platters which littered the back yard when you were in this delicious age, and which had a way of being found even on the steps into the kitchen or perhaps even in the kitchen itself? And can you not see still the muddy hands and shoes and dresses, and the serious faces of your comrades as they made and baked their pies with yours? And then there were the dolls' tea-parties, and the hours and hours of solicitude for the welfare of the dolls which must be rocked and lisped and sung to sleep just as invariably as the sleepy time approached, only to be rudely awakened in the morning by eager hands and made ready for the innumerable activities of the new day. Playing house with other children was likewise probably one of your earliest forms of infantile joy; while memory of the many, many hours passed in skipping rope; or in spinning tops; or in marshaling tin soldiers in hattle array; or in nursing a sick doll back to health (probably soon after you recovered from your attack of measles or mumps or scarlet fever) who, strange to say, was suddenly stricken low with the same malady which attacked you; or in racing up and down the yard and sidewalk dragging a swaying, squeaking cart behind you; or trundling a wheelbarrow back and forth across the lawn; or in dressing up in mother's or father's clothes and appearing upon the street of men for all the world like real grown-ups; or in listening for hours in awesome attention to wonderful stories of fairies and gohlibs or giants; or

with her, sleeping with her,—yes, even being sympathetically sick with her like a true friend. Listen some day when you chance upon such a child and you will hear her talking with her "imaginary" just as happily as though the latter were actually there in the flesh. Perhaps she will scold her, or it may be that she will rebuke her efforts at mud-pie making, or at doll dressing, or at housekeeping, or tea-party entertaining. But for the most part the two will agree perfectly, and will be found oftenest crooning in contentment over some commonly agreeable task.

The earnestness of play. One other thing should be said about the play of very young children before we turn to study the older child at his play. Children take their play very earnestly to heart, and vouchsafe to it their whole attention and their whole energy. Watch a child, for example, who is piling up block upon block in anticipation of a grand climax when no more blocks can be added. You will find that his face is as serious as it is possible for it to be, and as he carefully, hesitatingly adds block to block his whole personality is centralized and focalized upon the process. He is experimenting, testing, trying out with all his mind and with all his strength. But that fact does not make him the less demonstrative when the climax occurs and the blocks fall with a crash. His shouts of glee leave no doubts in your mind that if he can be very serious in his play he can in like manner be very boisterous. What a successful teacher one would be who could succeed in arousing in her children the sustained attention and the passionate earnestness which their blocks call forth!

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Report upon five minutes spent in observing the play of some domestic animal preferably the cat or dog.
- 2 Recall some of the things which you liked best to play in early childhood. Why do you think such games appealed to you?
- 3 Observe a single child or a group of children at play. Write out your impressions and conclusions.
- 4 Had you an imaginary companion? If so, recall some of your experiences in playing "imaginary."

THE LESSON APPLIED

1. To what extent have our educational values shifted in recent years, permitting the play motive to be made use of legitimately in the schoolroom? (The Greek word *schole* from which our word *school* is derived, meant *play*, or *leisure*.)
2. It has been objected to the introduction of the play and other instinctive motives which naturally hold the child's attention that they tend to "sugar-coat" education. How is this possible? Can you justify or deny this contention?

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2. Hall, G. S. *Aspects of Child Life and Education*, "The Story of a Sand Pile," pp. 142-30.
3. Lee, Joseph. *Play in Education*; especially chaps. 1 and 30.
4. Tanner, A. E. *The Child*, pp. 126-27; also chap. 10.

LESSON 12

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

7 The Play Response (*continued*)

What to look for in the observation period

- 1 Whether there is any socializing influence observable in the games played by the children during the play period (recess)
- 2 In what respects, if any, the games played by the girls differ from those played by the boys
- 3 Evidences of the boisterous element in play Of the purposive element

The play response of later childhood In our last lesson we took occasion to remark upon the strength of the play instinct in earlier childhood and to discuss some of the more common ways in which this response expresses itself at that age. In our present lesson we are to continue our inquiry into the nature of the play impulse as it appears in the lives and activities of older children, i.e., in children of school age. After all you will be dealing in your teaching more with children older than six years than you will with children under that age. The nature of the play response of later childhood should therefore be of even greater importance to you in your actual intercourse with children of school age than that of infancy. Let us then turn our attention to a discussion of play as it moulds and holds the lives of the former.

General characteristics In general it may be said that the age of childhood is the age of social play, the age of boisterous play and the age of purposive play. The earlier period of infancy as we saw, was rather the age of individual, quiet and aimless playing. When we discussed the gregarious instinct in children we said that the great age of gangs and sets begins with about the tenth year and continues in increasing proportions throughout the earlier

discarded, is about as social and socializing in its nature as any game which children play. Perhaps its very socialism is the reason for children in the midst of the social age always indulging more in it than in other sorts. There is no limit to the possible number playing it — the more the merrier. Skill in it is conditioned not upon clever judgment nor skillful muscles nor artistic temperament, all that is required is a pair of good muscular legs, and given that, any child is eligible. Recall for example the many hours of the day passed in childhood in this delightfully satisfying old game of chase. It mattered not whether there were two children or forty, it mattered little whether there was any "goal", all that mattered was that every one should be of single mind in the matter. And then what long happy periods of running and shouting and screaming to the lively tune of scampering feet across the playground or the high-road or wheresoever else you chanced to be. If variety were needed there was always the less strenuous "prisoner's base" which required just about the same agility without the extended powers of endurance.

If you will take the pains to watch the activities of a group of boys at playtime, or after school on school days, more than likely and sooner or later they will all join in playing baseball or, in the more usual form, "scrub". Here is another socializing game, for in rapid succession every player passes through all the possible offices, including catcher, pitcher, and umpire. It matters little whether there is very much skill manifested or not, a good player elicits praise and a poor player happy toleration, so that all are content. Of course they are keenly interested too in organized baseball, and what school is there nowadays worthy the name which has not its "team" to represent it against other schools? And what a deal of team play is in evidence not among the actual players merely but among the entire enrollment of the school when its "nine" meets other "nines". Everybody pulls together, there are no slackers and no traitors to the cause. This in itself is a token of the socializing spirit of

the games of later childhood. They all tend to promote in their participants faithfulness to the group, fair play toward others, and good comradeship in all.

Play is hoisterous. If you chance to live in a neighborhood where there are a goodly number of boys seven or eight to twelve and thirteen years of age you probably need no defense of this caption. Probably half the joy which children get out of play lies in the satisfaction which their vocal cords experience in free and untrammeled eruption. In fact participation in a game is not a prerequisite to this release of vocal energy, and you have doubtless seen and listened to scores of boys who found shouting and trilling and wailing and screaming and screeching ends in themselves. In this respect boys are not unlike the scores of dogs which you have seen and heard likewise indulging in passionate fits of barking when there is nothing in the world to set them off save their internal over-pressure which seeks its release in this noisy way. Nor is it a prerequisite to this intense vocalization that boys must be in groups. In pairs or alone, it does not appear to make much difference; vocal exercise cannot be held in leash, and a single boy dispatched by his mother across lots on an errand is certain to indulge on his way in a heterogeneous multitude of vocal gymnastics, echoes of which may extend backward to his home or forward to his destination. In a similar way and from a similar cause the woodlands are likely to ring on a holiday afternoon with the shouts of the juvenile bands who rove their depths in quest of chestnuts or acorns or small game. Sliding down a hill on a double-runner in a frosty winter evening, or whirling across the moonlit ice, or coasting on roller-skates down a steep incline, or playing tag in the field, or even trooping down the quiet street to school — all these activities are accompanied invariably by the hoarse shout or the piercing shriek or the boisterous laughter. There is nothing of your tempered voice and your gentle speech in the assemblies of boys. The words of the old poem, "Boys will be boys with their racket and noise," are eternally true,

and doubtless even in those strict days of the Puritans, boys found opportunity in some unfrequented spot to indulge their vocal organs to the utmost. As well try to hold back the plunging waterfall as to repress the invincible "racket and noise" of healthy young children.

An interesting commentary upon this delight in uproarious boisterousness is to be seen in the celebrations of the Fourth of July. In recent years, to the undying gratification of outraged mothers and fathers and uncles and aunts, the larger and noisier cannon-crackers are not purchasable as they were a dozen or more years ago, and consequently the celebrations of the national holiday tend to become more and more decorous and quiet. But the will to make noise is still there in the heart of every boy, and on this holiday of holidays it leaps up into response in long blasts on tin horns or whistles and the beating of drums and the discharging of such explosives as are available, so that while the *quality* of the "racket and noise" is somewhat impaired, its *quantity* does not deteriorate.

Play is purposive. And yet with all its noise and boisterousness play is developmental, and across the warp of shouting and immoderate laughter and shrieking and trilling there runs a woof-thread of seriousness, although it is frequently so thin as to be all but invisible to parents and older brothers and sisters. Nature is very much in earnest about her children, as Joseph Lee has remarked, and none of their play is really aimless. There is little question that the boy will be a better man because he was an exceedingly active and ubiquitous and vocally minded youth. To the clever discerner of childhood the purposive aspects of even the most boisterous play do not pass unobserved. Think, for example, of the training which boys unwittingly get in using the universal jackknife in whittling. You have probably suspected sometimes in observing some enterprising boy bent over his pine shingle that there is a distinct whittling age through which boys appear to pass, and in a general way your observation was correct. Most boys have

a craving for tools wherewith to huild great varieties of toys of which they have need, and the wise parent will see to it that this craving is reasonably gratified. The purposiveness in play is apparent, too, in such activities as collecting, exploring, bow and arrow playing, stone throwing, kite flying, velocipede riding, etc. Each one of these activities has a definite contribution to make in the evolution of the complete adult, and nearly every boy passes through distinct periods in which one or more of these activities predominate. Then, too, consider the voice trilling so universally observable among seven year olds. They are experimenting upon their own vocal abilities, and many a so-called "cat call" represents weeks and months of purposive training and persistent practice on the part of the boy. In addition to these phases of purposeful activities, should be mentioned the delight which young people take in puzzles, conundrums, sleight of hand, and other kinds of play involving care and skill in performing. Possibly the interest in the last mentioned type of mystery, sleight of hand is as strong as any interest which a child has in his ninth to eleventh years, and it by no means disappears even with the coming of adolescence. To be able to make things disappear — pass apparently out of existence — or to be miraculously metamorphosed before the wondering stare of hoon companions, is enough to call forth a sort of hero worship for the juggler who is nble to do it, and you perhaps have known of boys who passed many an evening in their playroom endeavoring to think the magician's thoughts after him. And fancy, if you can, the glass tumblers that were broken and the water that was spilled upon the floor in the vain attempt to empty a glass of wnter without appearing to do so!

And spruce gum¹. Where is the clever author who will write for us a whole volume on the lure of the spruce-trees? One of the chief attractions of the forest is undoubtedly the oozing gum from the spruce trees. If you lived in the country you can well recall the innumerable trips to the woods, the exciting search after promising sources, the

blistered hands and cut fingers, and then finally the triumphant return homeward with pockets bulging with the precious gum! Other purposive activities are to be seen in the interest in fishing, the climbing of trees, the tunneling in the snow and the erecting of snow forts at strategic corners of the back yard, the playing soldier, the building of water-wheels to spin in the nearest brook, the diving and swimming — all these are just as vital factors in the training of a boy's mind and heart as are the studies which you teach him formally in school, perhaps even more so. The normal adult is just as much a creature of his play environment as he is a creature of his study environment; and neither will suffice as a satisfactory sort of training without the other.

The age of mischief. The small boy and mischief have long been synonymous terms, at least in the mind of the cartoonist and the wit. The reason for whatever truth there is in this metaphor is not far to seek. There comes a time in the Big Injun Age when the rapidly evolving boy ceases to have the faith in the symbolistic life of play which he had earlier. He is coming to be a realist just in proportion as life opens before him and dispels the idealism which earlier surrounded him. When this age of realism dawns the boy rebels inwardly at the silly doll play of his sister, and may even in a fit of wrath kick her doll-house down and chide her sharply for believing in such unreal things as dolls and doll-houses. Santa Claus has ceased to be a myth, and now he sagely denies the existence of any Santa Claus. His trains and carts and wheelbarrow even are no longer seen in the same light. The halo which cast its spell about symbolistic infancy and early childhood is now dispelled, and naked realities come to take their place. In such a state of mind, the time of life when the human is neither infant nor youth but stands within a sort of umbral shadow, boys often find it not easy to break with the past and embrace the present. There come days when the old games are no longer satisfying, when the call of wood or stream or of field is likely to go unheeded. The result is that, not know-

ing what to do nor which way to turn, they do the most unusual or unlikely thing—it is the age of mischief. Tricks upon other boys or upon older people are interspersed with practical jokes which may result unhappily for all concerned. Smoking and other bad habits find fertile soil in which to develop at this time. In many cases the customary reaction does not come in time, and boys enter upon unfortunate careers which ultimately may lead to their becoming really bad gangsters and perhaps eventually inmates of reform schools. It appears to be an age in which the boy is blindly seeking the light and striving valiantly to find himself. The term *puberty* is applied by psychologists to the age of life under discussion here. What does the word mean?

Girls' play. The play of girls is always less boisterous than that of boys, partly because they have more home duties which keep them from mingling with other girls of their age so constantly, partly because they are naturally more retiring, and partly because they are naturally more serious minded. But this does not mean that girls do not play boisterously enough on occasion; it rather means that the limitations of their sex place a mild restraint upon their sports. The girl is concerned with learning to use the finer muscle movements in embroidery and sewing and basketry; she is intensely interested in reading, usually much more so than boys; she loves such games as London bridge, ring-around-a-rosie, farmer in the dell, and others which can be played on the lawn or in the sitting-room. She is also concerned with exchanges of confidences with her chum or the other girls in her set, and passes hours strolling arm in arm with her friends jesting and conversing lightly about such engrossing matters as books and games and air castles and future careers and music lessons and a thousand and one other items of equal importance. It is the age of ideals and ambitions for the life which beckons rosily before them.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 What evidence can you cite from your own observation of the play of older children that it is social in its nature rather than individual?
- 2 Discuss the boisterous element in the play of boys and the play of girls.
- 3 What different forms have you known 'mischief' in older boys to take?
- 4 There are several theories which have been advanced to explain the origin of play. Look up and report upon each of the more important of them, viz. the Schiller-Spencer Theory, the Recapitulatory Theory, the Gross Theory, and the Relaxation Theory, citing the evidence for and against in each case.

THE LESSON APPLIED

- 1 Suppose, in order to make her instruction in any subject more interesting and effective a teacher divides her class into two teams; how can this appeal to the instinct of play exert a socializing influence over the individuals?
- 2 How are such organizations as school improvement leagues, school congresses, bird protection clubs, school orchestras, baseball leagues, etc., socializing agencies? Do they have also a purposive aspect?
- 3 To what extent may the atmosphere of the school playground be made to contribute toward the socializing of boys and girls? Would free play hours or play periods supervised by the teacher be more satisfactory in this respect?

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- 1 Kirkpatrick, E A *Fundamentals of Child Study*, chap. 9
- 2 Lee Joseph *Play in Education*, chaps. 10 and 38
- 3 Norsworthy, N., and Whitley, M T *Psychology of Childhood* chap. 12
- 4 Waddle, C W *Introduction to Child Psychology*, chap. 6

whining. Again, if the infant is repressed when it feels active, as for example being placed in the cradle or put prematurely to bed, it responds in much the same way. Or, if a desired toy is not forthcoming when wanted, or has been taken forcibly from it by worn-out parents, all the symptoms enumerated become at once in evidence and the fighting responses are made by the angry child. In a similar way if jealousy is aroused in it by preferences shown to a visiting child by the unthinking mother, who desires above all things to manifest a polite interest in her neighbor's infant, unmistakable and insistent symptoms of anger and rage are observable in the ensuing crying and perhaps actual abuse of the infantile visitor. The ownership response, when thwarted, undergoes a like transformation, as do other instinctive activities of infancy.

In older children. But as the child grows older he comes more and more to repress the crying and fretting which accompanied his earlier anger states, and relies increasingly upon the strength of his muscles to procure the desired privileges and advantages. If the mother attempts to remove the toy or to exhort him, he seizes it madly and may actually strike even her. If she remonstrates he will perhaps run away, thus temporarily at least proving himself superior to the forces which would repress and control his pleasure. When childhood is fully come, however, this attitude toward the mother or father has undergone a marked change, and the child no longer resents physically the will of the home. But if he controls his fighting responses while within the four walls of home he makes up for it with good measure when he is associated with his fellows on the playground. It is true that there are great individual differences in children in their response to the fighting instinct. Many of them either are not particularly pugnacious, or else they never chance to meet situations which would lead them to give expression to it. In such children about all the evidences there are of the fighting impulse are confined to occasional tilts with one another over trifling

matters of disagreement which never progress far enough to be termed real fights. It should be noted, however, that even the shrill tongue and the unkind speech and the cutting remark and the disagreeable attitude are just as much forms of expression to the instinct as are actual physical encounters.

In general the sorts of stimuli which favor the excrescence of the actual physical combat are of four kinds, viz.: first, the belittlement or disparagement of one's father or some other member of one's immediate family; secondly, the insult offered to one's pride in his own abilities or accomplishments; thirdly, immoderate teasing on the part of others; and fourthly, unfairness or cheating of a playmate. As for the first of these, the disparagement of one's relatives, little need be said in exposition. It has doubtless been a common observation on your part that one of the deepest insults which can possibly be offered by one boy to another is disagreeable reference to his parent, regardless of whether or not the insinuation happens to be true. It is at once the signal in any red-blooded boy to spring to the defense of his home or his people and avenge the wrong. Indeed, the defense of the family has always been one of the fundamental determinants of action in the whole history of the race; it is the same impulse which actuates the boy in his challenging of any disagreeable allusion to his own family.

In the second place, teasing as an incentive to battle, the response is not so direct and immediate. Up to a certain extent, teasing may even be distinctly pleasurable, but beyond that limit it becomes positively disagreeable and intolerable to the victim. A boy may bear for weeks and months at a time with the teasing of an older boy, and then suddenly fall upon his tormentor on some fine day and give him a sound thrashing and a much-needed lesson. Instances of this sudden explosion of energy long pent up are by no means rare, and you have very likely known of more than one yourself, either in your own early behavior or in the behavior of others. The same thing exists in the animal

world, and some small animal long the victim of unjust and persistent exploitation on the part of some larger member of his own family may turn upon his pursuer and not only hold him at bay, but actually punish him in a fierce physical encounter. It has often been said that in order to rid one's self of the persecutions of a bully the best procedure lies in hounding the bully, for often a sizable body harbors but a feeble will and slight courage. It is to be regretted however, that often the victim lacks the courage of his convictions and continues to be the sufferer. In such a case the first statement which we made in this lesson applies with its true emphasis: a boy never becomes a man until he has had a fight.

The third incentive for the release of the fighting response is actual insult to one's pride in his own abilities or accomplishments. Let another boy sneer at a child's attainments in the schoolroom or his achievements outside and the setting is made for the latter to challenge the former either to recant or to defend himself in physical combat or, if prudence decrees otherwise the one insulted nourishes within his breast the rankling grievance which may or may not at some future time be settled. For example a jest at one's manner of speech or of one's dress or disparagement of one's collection of shells or of one's composition or of one's recitation invariably sets the heart beating faster and summons up within one the fighting impulse either to challenge the detractor then and there or else to speed ahead and prove one's self the better scholar or the more favored of one's companions. Thus either physical or mental rivalry may result.

Finally fourthly unfairness or cheating in a playmate may become the stimulus for an outburst of the fighting spirit. It chanced for example that a group of boys whom the writer was observing were enjoying a very short recess by coasting on a long toboggan down a steep hill. Halfway to the bottom of the hill there was a sharp turn in the road which made it necessary for the coasters always to station

The origin of the fighting response Primitive man was, as we have seen, continually surrounded with dangers, many of which he did not understand and from which therefore he was but poorly able to guard himself. His two chief sources of danger lay, however, in the larger animals and the other tribes of human beings which surrounded him, and the only positively dependable way whereby he could arm himself against both of these enemies was necessarily by evolving or developing the harder muscles. This he no doubt did by actual combats which he had with them, quite as much as by the hard, continual struggling against the rigors of the natural forces which encompassed him. Fighting was a necessary form of activity frequently employed in the earliest history of the race, and to its original fighters the race as at present constituted owes its preservation in the remote days beyond the dawn of history. The fighting instinct in boys and girls is therefore merely the remnant of one of the essential aspects of the racial struggle for survival.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Observe all the fighting responses manifested during the day by an infant
- 2 Report upon instances of any physical combativeness which you chance to see in children. If possible discover the causes
- 3 What has been your observation of the fighting response in girls?
- 4 Has the fighting response any constructive value in adult society?
- 5 Recall all possible instances of the appearance of the fighting instinct in your own childhood

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- 1 Norsworthy N and Whitley M T *Psychology of Childhood* pp 54-57
- 2 Thorndike E L *Educational Psychology* vol 1 *The Original Nature of Man* pp 68-75

ity One of the cases falling within this classification states that "Willie (fourteen years of age) played with boys much younger than himself, and when tired of play he would throw away their hats, throw the little fellows into the mud, cuff their ears, and always send them home crying before they had played an hour" (2) Primitive blackmail, as illustrated in this A boy (nine years of age) goes up to a group of smaller boys playing marbles puts their marbles in his pocket and walks off, or this "Boy would whip his younger brother until the latter swore, and then under threat of exposure would make the younger do the chores for him" (3) Tormenting, as in the case of "M (nine years old) who, knowing that F did not like to have her hair touched, tied it in hard knots when she was asleep" (4) Excitation of fear, as in this incident "Willie was afraid of dogs H put Willie on dog's back Willie screamed and cried H laughed" (5) Excitations of anger "L (eight years of age) had the habit of crying at little things When the children at school found this out they would pull her hair, knock books out of her hand just to see her cry, and then they would call her 'Cry Baby'" (6) Calling names "The name applied generally is in some way related to personal peculiarities as 'Long Legs' 'Tire Head,' 'Cry Baby,' etc" (7) Teasing older people with personal peculiarities "Boys would throw stones at an old eccentric man's house, until he came out and angrily told them he was writing down their names and would have them arrested" Burk's data include a great many other illustrations of the form which the teasing response takes in boys and girls We have cited enough of them to give some idea of the extreme diversity of the response

Obviously the teasing is directed always toward those children who will respond most satisfactorily to it children take little delight in teasing those of their companions who do not manifest symptoms of displeasure or concern at their efforts and soon learn to pick out from among them all the relatively few who are easy prey to their will In fact

Display and Approval

Evidence of display response in animals. It may be that you have chanced to see a peacock in the zoo or on the peacock farm during the rare moments when its beautiful tail was spread into a circle resplendent in its myriad of colors and shades. If so, you observed that the peacock was not content to display his beauty in privacy, but that he appeared actually to experience real delight in strutting back and forth in the sunshine before the appreciative onlookers as though for all the world he was proud of his looks! But if you have never happened to see a peacock during these moments of display, you have surely seen the cock strutting proudly about among his feathered subjects in evident fowl-consciousness of his thick-set body and long, feathery tail and arched neck, which no doubt inspire the less imposing hen to look upon her lord and master with no small amount of fowl-appreciation. Or again, you have been attracted, ever since the childhood days when you chased them laughingly over the fields, to the bright colors of the butterflies which flit idly about from flower to flower as though displaying their simple beauty to whomsoever chances to see and admire. Indeed, the butterfly has come in our speech to be synonymous with vain beauty without any aim in life other than the display of that beauty. Can you not think of other illustrations of vanity in the lower organisms which are more or less akin to the display responses and the approval responses of human beings?

Display in primitive life. You learned in your study of the Indian that one of the remarkable traits in his behavior was the importance which he attached to war-paint and feathers and heads and wampum. It is probable that the employment of these materials in his decorations had a twofold purpose: the one, to inspire terror in the hearts of his enemies, and the other to attract and win the approval of the female. As an illustration of the first of these values which the Indian attached to decoration of the person,

many are actually led to court such expression, often to their own mortification. Every one desires success in his business or profession quite as much that he may win the social approval of his fellows as that he may maintain his family in comfort. The good will of one's neighbors is usually of more intrinsic worth to one than is his money. The cherishing of one's good name, the maintaining of one's personal honor, the walking circumspectly within the law are all aspects of the desire for approval which is implanted from most primitive life in every human breast. Even one's ambition leads him on to a position of greater influence and usefulness not more than to one in which he can deserve and receive the approval of society. Occasionally, it is true, this thirst for approval leads to undue and immoderate display, as in the case of the woman who dresses extravagantly or immodestly; but for the most part civilized beings of mature age turn their efforts away from the more primitives rooted *display* and toward the more cultivated and social *approval*.

Display in children. It is true, however, that in young children who are still more primitive and closer to the heart of nature the grosser instinct of display occupies a very prominent place. From the time when it begins to be interested in showing off its new toys or in calling the attention of a guest to its curls the child is a *displayer*, par excellence. Note, for example, the pride which the young child takes in a new dress, and how consciously she trips along the walk in order to display it, not unlike the peacock or the butterfly. And new shoes! You will probably not find it difficult to recall the conscious pride which you yourself took in a new pair of shoes, and how happily you walked to school or to church in them, stopping anon to gaze down into your own reflected happy face in the toes. You may recall also that you compared them secretly with the older and more worn shoes of some playfellow, and inwardly pitied her who could not have a new pair like yourself. Observe too the pride which children take in displaying some hit

part of parent, teacher, and chum. With what eagerness and earnestness does he seek always to do the teacher's will, to anticipate her slightest wishes in the way of erasing a blackboard, or carrying her books to and from school, or stooping to pick up her pencil from the floor. And how he strives to improve the "curve" of his hall, or the trustworthiness of his muscles in order to win the admiration of his fellows. Social esteem is as sweet to him as to the adult, and social contempt every whit as bitter. So with the girl, although she is probably not usually as active in her solicitations of praise as is the more thirsty boy.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Report upon any instances of teasing which you chance upon in children. Observe especially the reasons why the victim is the victim.
- 2 Enumerate several things which you have observed that people do partly at least to be approved by others.
- 3 Observe as many children as possible and note the prominence of the approval-display response. Report your results to the class.

THE LESSON APPLIED

- 1 What direct use can the teacher make in the classroom of the natural desire for approval which actuates children so that they will be eager to do their very best possible work?
- 2 Is there any danger that those children who are possessed of but mediocre ability may lose interest in their work if the teacher makes too open or frequent appeal to the instincts of emulation and approval?

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- a. On teasing and bullying*
- 1 Burk, F. Teasing and Bullying, in *Pedagogical Seminary*, vol. 4, pp. 336-71
 - 2 *b. On approval and display*
 - 2 Norsworthy, N. and Whitley, M. T. *Psychology of Childhood*, pp. 66-68
 - 3 Thorndike, E. L. *Educational Psychology* vol. I, *The Original Nature of Man*, pp. 89-91

LESSON 15

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

10. The Rivalry Response

What to look for in the observation period:

1. Indications of rivalry in the upraised hands of the children whenever a question is asked by the teacher. (Especially in the lower grades, and regardless of whether the children can answer the questions asked or not.) Why?
2. Other illustrations indicative of the rivalry among the pupils in securing the approval and notice of the teacher.
3. Whether there are any indications that the teacher is endeavoring to turn the instinct of rivalry to advantage. Are there, for example, honor rolls, "health teams," etc.?

General characteristics. The rivalry response is interwoven closely with the other instinctive forms of behavior and is in itself merely a higher form of the fighting response. Just as a boy will oppose the thwarting of his desires by fighting, so he will strive equally hard on occasion to excel his fellows by putting forth his best energies in other than pugnacious effort. Thus, he may respond to a thirst for approval which he fails utterly to win in either one of two ways: he may challenge his detractors to physical combat, or he may redouble his efforts and so come ultimately to excel them in the very field in which he failed before, thereby winning their approval and even admiration of him as a playmate. If he follows the latter and wiser line of action, he will be actuated by the motive of *rivalry*. The end of rivalry is, therefore, approval; the former instinct is in the nature of a handmaiden to the latter. Rivalry becomes, in its finer manifestations, a straightforward, social striving for the approval of fellow, group, or class.

The response among adults. Rivalry is at the basis of many of our adult forms of response, and perhaps occupies

a place in our innate equipment second only to the self-preservative instincts. You see all degrees of it at any time and in any group. You see alike its finer and its grosser aspects. As an illustration of the last, witness for example the absurdities and the extravagances of dress and style which milady displays in her circuitous game of "keeping up with" the other ladies of her acquaintance in the matter of her personal appearance. Another instance of the same grosser aspect of the rivalry response is to be seen in the multiplication of automobiles among those who can but ill afford this indulgence of their determination to keep up with their neighbors. Can you think of other negative phases of the rivalry or emulation response in adults?

But there is distinctly a positive side to the instinct to emulate. It is observable in the business rivalry which seethes among men of business to outstrip their competitors and rivals by underselling them or, on the negative side, by absorbing smaller businesses in their own. The trust is after all but the natural and logical culmination of the innate desire in every human breast to excel or outstrip or outdo every one else in our field. The motto "live, and let live," when applied to the existence of small, independent businesses, is quite likely to be too ideal to find universal application. Still, the rivalry observable among men in everyday life tends usually rather toward the positive than the negative. It is a constructive, energizing, driving force which incites us all to do our best and to exert our highest efforts in the furtherance of our social or moral or professional interests. The reward is the satisfaction of knowing that we have done our best; it is also the approval of our friends.

The rivalry of children. The simplest and crudest form of the rivalry response is to be seen obviously in children who make no conscious efforts to conceal their satisfaction in winning out over their fellows, yet who may make the most consistent and transparent efforts to do so. Even the infant displays a goodly amount of envy (which is the touch-

one; in owning a larger cart, or a larger gun, or a better bicycle. In a similar way, there is deep satisfaction to the child in being able to whittle out the best and shapeliest boat, or in rigging it with the most graceful sails, or in being able to make the shrillest whistle from an alder stick; or in knowing how to fashion the strongest bow and the truest arrow; or in knowing how to trill one's voice best — and what hours boys spend in practicing this childlike art! There is likewise a deep inner joy in knowing where the fish run largest and shiniest; or in knowing where the largest fruit and the ripest berries are — and what child does not? — or in knowing how to tie the strongest knot, or to weave the longest plait of oak-leaves, or to trap the wildest wood-chuck. And, if these more elevating interests fail, there are contests of strength or cleverness a-plenty wherein boys can satisfy their thirst for leadership. Inferring that all other sources of rivalry had for the time been failed, the author not long since was an interested observer of a small group of boys who were pitting against each other their expectorational strength and agility in determining who of them could spit the farthest! Supply of available saliva being speedily exhausted, this game degenerated after a few attempts into a contest to determine who could spit the most times in a given period! To such immodest or vulgar depths does the thirst to rival one another occasionally plunge its possessors!

It is true for the most part, however, that available fields of effort wherein rivalry is possible are all but limitless, and children are rarely forced to pit their skill or resources of spitting against one another. Every boy likes to be a leader in something. It usually happens, however, that few of them are so equipped temperamentally or so natively endowed as to make possible the attainment of their desires to this end. Most boys cannot be leaders. On the other hand, the great mass of children are more or less alike and so can compete with one another in nearly everything. It is only the natural leader who is an outcast in the competing. His leadership is

taken more or less for granted, and, far from endeavoring to outrun or outplay or outwit him, the great mass of children are content to pit themselves against their fellows of equal qualifications for the purpose of carrying off temporarily at least the honors of their striving and competing. It is doubtful whether this impulse to excel others ever comes consciously into the minds of children. It appears rather to compel them without revealing to them its identity. It is enough to run and shout and trill and wrestle and jump for the sheer pleasure residing in such activities, and the pleasure is sufficient reward, but back of it all lurks the omnipresent instinct of rivalry.

Mental rivalry. Rivalry in actual school work where mental effort plays the significant role is not, however, so easily brought about. Mental keenness and alertness are far more recent acquisitions in the life of the race than are the purely physical responses, hence they do not so compellingly influence the behavior of children as do the latter forces. An instinct depends for its strength upon the length of time which it has existed in the history of the race. Thus, the instincts to preserve the organism, to perpetuate it, to feed it, and to protect it are among the very oldest and strongest agencies in controlling behavior. Rivalry in its mental phase at least, ranks with imitation and modesty and the other forms of behavior — influencing agencies which are only partially instinctive in their basis. Still there undoubtedly does exist in children a desire to excel their fellows in school work and school activities, although it is often difficult to determine in how far other instinctive responses, such as display and approbation, come in to assist in the matter.

There can be little question, though, that the pride which children display in having their compositions or drawings commented on by the teacher and perhaps hung in conspicuous places about the schoolroom, has a distinct basis in the instinct of rivalry. If you have ever observed a class of first grade children during the time in which the teacher

was developing a lesson, you have noted a very interesting phase of this rivalry response in the eagerness with which the children vied with one another in answering the questions asked by the teacher. It did not matter whether they knew the facts requested, or indeed that they even understood the questions asked; every hand was upraised, and every hand competed with every other in securing the teacher's leave to speak, often to the confusion of the very child whose hand was most lively when he was permitted to contribute his vaunted share in the lesson. You have doubtless seen a myriad of small flying hands gyrated dangerously near the teacher's face when the youngest children were around her in a semicircle, and have perhaps marveled that they did not actually smite her in their earnestness.

Then, too, how children will work for a prize offered by the teacher as an incentive to their flagging attention! The prize may and should be nothing more than a cross after one's name or a star upon the blackboard; it matters little. The child who has the largest number of stars is secretly and frequently outspokenly envied by those less fortunate; and usually envy is sufficient to stimulate the lagging ones to redouble their efforts in order to rival the rest. In like manner standing at the head of the class is a blissful though momentary privilege for, with the fluctuations of fortune, one is certain to be displaced very soon by the next below, who in turn must yield place shortly to another.

As the child grows older and passes out of the earlier grades and into the upper ones, and ultimately out into higher schools or into life, the conscious side of rivalry comes to the fore, and now there is more systematic and continued effort to rival others. It does not cease, as we saw, with the attainment of maturity, but continues to be a strong motivating force within most of us so long as we mingle actively with our fellows. Its danger obviously lies in the possibility of its making the child selfish and thoughtless of others in his work or play, traits which, if they continue into maturity and adulthood, will wreak havoc with

the whole society in which he moves. The only salutary rivalry is friendly rivalry.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Report upon any instances of rivalry which you observe among children or groups of children.
2. Make a list of some good and some bad results of the rivalry impulse. Be concrete as far as possible.
3. Have you observed any incidents of rivalry in animals?

THE LESSON APPLIED

1. Would it be wiser for a teacher to encourage rivalry in school work between groups or between individuals? Why?
2. Recently there was found a teacher who at the beginning of the school year offered a valuable prize to that pupil who at the end of the term should have made the greatest general progress in school work. What was the psychological effect of this upon the pupils? Was its effect upon some of them quite different from what it was upon others?
3. Would there be greater all-round satisfaction if our schools were so graded that bright children were associated only with bright, and dull only with dull? Can you think of any objections to such a plan?
4. Does educational value inheres in such activities as school exhibitions and entertainments, interschool ball games, school savings banks, fairs, and other agencies that tend to promote intellectual or physical rivalry among the participants?

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LESSON 16

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

II. The Curiosity Response

What to look for in the observation period

- 1 Evidences of the curiosity response of the children as shown
 - (a) By the questions which they ask
 - (b) By the interest which they manifest in new facts or principles that they learn
 - (c) By the tendency which the lesson has of being frequently 'side tracked' owing to some one's desire to push an interesting thought further
 - (d) By the profoundness of their attention during the most interesting moments of learning some new and strange fact.

General characteristics You have by now doubtless begun to suspect that all the instinctive responses are more or less closely connected with one another, and this is actually the case. The whole racial background of human life as present in the infant, is a mosaic in which each tendency inherited from the past is closely joined with each other tendency. In the case of the curiosity response this connectedness is particularly noticeable, for it is closely related now to the impulse of general physical activity, now to that of collecting, now to that of the *Wanderlust*, and now to that of simple play. It is at once the genesis of attention and the energizing motive of much of juvenile activity. It has been one of the most potent factors in the evolution of knowledge and progress.

Curiosity of adults You have doubtless recently been engaged in study or reading at a time when others in the same or an adjoining room were in conversation. For a while your interest in the book before you was sufficient to keep your attention from wandering to the other group of people. But let one of the friends chance to mention your name dur-

to see a great man, to touch his hand, to hear him speak, and perchance have the rare privilege of taking a short walk with him or of listening to his conversation. On the higher levels of achievement the same force is apparent in the delving into science, or history, or literature, or art, in the experimenting and the exploring and investigating which are such fascinating fields of effort to all of us, according to our abilities.

Curiosity in children. In earliest infancy the response comes into evidence; you have seen it in the intense interest which the four-months-old baby takes in examining its hands and fingers and toes, for all the world as if they were entities quite disconnected from itself. You have seen it, too, in the earnest attention which it pays to the sunbeam playing upon the floor or trembling on the wall. In a similar way the ticking of the clock upon the mantel may hold the infant's fluctuating attention for minutes at a time, and is sure to attract it a dozen times a day. If another baby chances to come to visit the home, its gaze will be riveted upon the stranger for perhaps five or ten minutes before any further advances are made. Very likely you have observed two infants thus accidentally juxtaposed who continued to stare at one another until some object more compelling coaxed their eyes away. We have already noted the avidity with which children place everything available in their mouths; this, as we pointed out earlier, is in part due to the food-getting instinct; it is in part also traceable to the instinct of curiosity. In fact the young infant depends quite as much upon his mouth as a sense determiner as he does upon his fingers or his eyes or ears. It is only as he grows older that he no longer relies for information upon his sense of taste or his general oral sense of shape, size, and consistency.

Other illustrations of the working of the curiosity response in children are not far to seek. The child who takes delight in tearing paper is curious as to the nature of paper. The child who bangs his rattle upon the floor is curious as to the

'open door'? It is the same impelling inner force of curiosity which made the children 'love to watch the flaming forge,' and the poet himself well recalled those days long ago when he was one of the semicircle of eager onlookers "under the spreading chestnut tree." There was an education in the old time blacksmith shop, now fast passing into oblivion which was invaluable to the boys and girls whose curiosity led them to follow all the many processes of shoeing a horse or mending a wagon — an education which even the modern ever multiplying garages fail utterly to continue. And yet how curious children are about automobiles and engines and self propelling vehicles generally. The writer recalls well what a source of endless delight it used to be to him to ride in the locomotives which puffed up a spur track in his own boyhood town, and with what marvel he watched the manipulation and control and mechanics of the tiny engine. Witness boys never satisfied love of railroad stories as an indication of this same curiosity concerning the many processes involved in the operation of a railroad. Besides these, children are always curious about sealed or tied up packages — as indeed are all of us, they are curious about matches and fires about seeds and one child actually dug up the beans that had been planted a few hours before to see whether they were growing all right (!). They are curious, too about the origin of life, the meaning of death, religious rites and their significance, and they are curious concerning the Deity.

Destructive aspect of the response But all this thirst after knowledge results sooner or later in the destroying of a great many different objects with the purpose of determining the substance of which they are made or the force which makes them move, or the source of the sounds which they emit. As instances of this destructive phase of curiosity may be mentioned the two year-old who broke his toy gun in order to find what made it pop, or the three year old who took his toy cow to pieces to discover the origin of the "moo", or the four year old who took the clock apart to

find out what made it strike; or the six-year-old who broke in her doll to search out the mystery of the closing and opening of her eyes; or another four-year-old who cut off her doll's hair in order to prove whether or not it would grow again; or the seven- and eight-year-olds who broke the family thermometer by placing the bulb upon the hot stove in order to see how high the mercury could be forced to rise in the column; or the six-year-old who destroyed his toy violin to determine the reason for its making the sound which it did; or the five-year-old who cut in the head of his drum for the same reason; or the eight-year-old who broke the family cuckoo clock in a vain endeavor to induce the cuckoo to come out! Besides these and scores of other illustrations about which you may easily read by studying *Reference I*, one five-year-old boy tried with all his might and main to pry open the jaws of his uncomprehending dog in order to find out what made him bark (!).

And then there are the omnipresent "Why" questions, at once the source of joy and misery in the parent and older sister or brother. Listen some time when you chance to be riding on a trolley car to the variety of questions asked by a two-year-old or three-year-old child about the car and the conductor and the motorman and the bell and the people and the controller and the stopping and the starting and a score of other things which come under the observation of the indefatigable young student of the mysteries of the trolley car. These questions are in themselves an unmistakable evidence of the curiosity which rages in the breast of every child. It is Nature's way of introducing her child to the wonders and the actualities and the potentialities of the universe. To evade or falsify would be a positive insult to Dame Nature, who merely provides parents and older children in order to satisfy the curiosity of those young and tender in years. Once such satisfaction has been given to the uttermost, parents and older persons generally lose their prime capacities in this world.

In older children the instinct grows more the less potent

LESSON 17

INSTINCTIVE BEHAVIOR OF CHILDREN (*continued*)

12. The Maternal Response

In animals. You have doubtless at some time or other in your life witnessed the distress of a mother bird or a father bird, or of both, when they made the discovery that their nest had been blown down or torn down and the nestlings within destroyed. For hours, and perhaps for days, the parent birds were to be seen hopping disconsolately about the vicinity in the vain hope that the lost would be found; and for days their mournful songs hovered over the place until perhaps you came very near weeping yourself at beholding the sadness and misery of the bereaved. This is an illustration of the *maternal instinct*, or the *mothering instinct* in birds. But the response is by no means confined to bird life: it is found in every higher organism known, although its strength and permanence depend largely upon the place which the organism occupies in the scale of life.

In the hen watching over her brood the same maternal instinct is observable. Let a hawk approach and instantly her feathers ruffle up and she may even dart into battle against the marauder whilst her chicks scurry to cover. Or it may be nothing more than the farmer's wife herself who approaches the spot where the brood is burrowing; the response is apt to be the same: the hen becomes cross and disgruntled and may even fly passionately at the intruder, especially if she attempts to take up one of the chicks. In the same way the mother cow, when her heifer is taken from her, manifests symptoms of the most extreme distress and usually has in her eyes for days a reproachful look which, taken together with her passionate and long continued lowing, indicates a very nicely developed parental instinct. So the cat, deprived of her sizable litter of tiny kittens, mews

rope, now asking a multitude of questions of its mother, and now venturing hesitatingly across the aisle to be friendly with some one to whom it is particularly drawn. It is as though we adults had within us keen memories of the lost paradise of our own childhood, and were eager to let those memories be revived by the spectacle of other infants still in that mystic and delicious age. As a matter of fact, however, it is probably the dominance within us of the maternal instinct, more than any other force, which draws our attention involuntarily to the little child. Nay, even your grouchy gentleman will sooner or later withdraw himself perforce from the depths of his newspaper and watch the infant in spite of himself, as will also the novel reader and the introspective party. Such is the appeal of innocence and infancy to us all. The child crying bitterly upon the street is the infallible stimulus which prompts every one within range of its cry to pause beside the heart broken one and to sympathize with and mother it. It is a response as old as society itself.

And then think of the tremendous appeal which the story of an unhappy or misunderstood or repressed child has for all of us. If you have read the story of Little Nell in Dickens's *Old Curiosity Shop*, and have followed the little waif toiling about the rough countryside with none but poor old Grandfather Trent to support and comfort her, your heart must have been stirred within you to the beauty and nobility of the child's soul, and the mother instinct within you yearned over the tiny, brave little creature. And so with Oliver Twist, and Little Dorrit, and Paul Domhey. And so with every other child of fiction for whom the author succeeds in creating sympathy and love in his readers. Then there are the orphan, and the foundling, and the deformed and the crippled and the poverty pinched, across whom we come and among whom we move to a greater or less degree in our everyday lives, the maternal within us overpowers us at times when we contemplate unhappiness or limitation in any form in the innocent children. Perhaps

seem to be the favorite; if, however, such are not forthcoming, then rag dolls will do just as well. In the study of dolls referred to above, it was found that children made their own dolls often out of pillows, sticks, bottles, corncobs, clothes-pins, and even cats. Half the delight appears to be in dressing these strange dolls, made while one waits, as it were. And yet there can be little doubt that down deep in the heart of every girl there is a yearning for at least one doll of the finest material and the costliest apparel, for exhibition purposes if for no other. You recall doubtless the story of Cosette in *Les Misérables*. Poor Cosette, who had never possessed a doll in her life, stood in the gathering dusk by the bright windows of the toy-shop next to Thénardier's tap-room and gazed long and ardently, yet hopelessly, upon the beautiful pink doll stretching its arms out toward her from within the window, little dreaming that ere another day had passed this treasure, this delicious breath from heaven, would be reposing in her own thin, emaciated arms. But so it did, as it turned out.

But after all the large, exquisite doll is not indispensable, and you will doubtless find children who never possess anything more wonderful than a small rag doll, or perhaps a small china one, and such modest possessions are apt to be just as well beloved as the more elaborate and costly ones. Even when broken and lacerated and discolored beyond all recognition, a doll is still a doll, and often the oldest and least attractive from our point of view is the favorite from the child's. Further evidence of the mothering instinct toward dolls is to be found in the fact that dolls tire, grow sick, require the physician's skill, feel hunger and thirst, cold and heat, and respond generally to varying stimuli just the same as does the possessor! As a result they must be put to bed regularly for naps, must be tenderly ministered unto, must be fed and given to drink, and must have their clothes properly regulated as to climate exactly as solicitously as their own mothers oversee their own welfare. Thus is the mother love in its incipiency flooded freely upon the doll.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Observe and report upon the mother instinct in some domestic animal or pet.
- 2 Note the interest which any chance group of people will manifest in a child.
- 3 Recall your own early experience with dolls. What is your present attitude toward them?
- 4 It has been often reported to the writer that the interest which children used to manifest in dolls is slowly waning and that the modern child cares little for doll play. If this is your observation, can you account for the change in attitude? Is the tendency away from dolls a beneficial one?

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Imitation in adults. Imitation in adult human beings is largely of the learned or acquired sort. If you will stop to ask yourself through what agencies you have learned to talk, write, play the piano, or study a lesson, you will no doubt be forced to the conclusion that the secret of your learning any art lay at least to a considerable degree in imitating some one else. True, this may not have been always conscious, but neither on the other hand was it reflex and involuntary. Fancy one's learning cleverness or skill in any performance because one cannot help but imitate reflexly! Consciously or unconsciously, however, we learn to govern behavior largely through imitation of our companions, or teachers, or friends. Ordinarily the motive behind imitative acts is either the satisfaction which will accrue to the organism after it has imitated, or else it is the social approval which will be vouchsafed as a result. Take for example the habits of courtesy and politeness or good form. We learn to pay homage to these established rules of conduct in order to escape the censure of society or, more positively, in order to win the "well done" of society. Such behavior as lifting the hat upon meeting a lady, or eating with the fork, or dressing modestly, or allowing precedence to age is acquired by the individual primarily in order that the onlooker — which means society — may approve. He who takes liberties with established custom receives justly the condemnation of his fellows, whether it be in the matter of his dress, or his table manners, or what not. Originality in the realm of custom and politeness, or in other words a failure to imitate recognized good form, rarely receives the commendation of society. And yet there is undoubtedly a danger in slavishly and continually imitating the established virtues of custom. The Chinese, for instance, because all education for them consisted until recently in glorification of the past ages and their civilization, remained for centuries a backward nation and a stagnant society. Can you think of other illustrations of imitation in adult life aside from the realm of custom?

of a child's speech, although it is no longer motivated by the immediate and reflex tendency.

It is apparent, then, that imitation as a pure instinct is a very limited term, applying only to those responses which are not learned by the child. Very shortly imitation becomes either conscious or purposeful, with a distinct end in view, i.e., satisfaction or approval. Take by way of illustration the writing process. If you have ever watched a child learning to write from a copy or over a copy you discovered that he was using a great deal of energy, and that perhaps his tongue and mouth were at work almost as hard as his fingers. This is a case of *voluntary imitation*, entered into with the more or less present idea of learning to write. Another illustration of voluntary imitation may be seen in the conscious effort of a child to build a tower of blocks like the one constructed by a playmate. So, too, constructing a toy from a pattern, or drawing a map from the geography, or imitating the whistle of a locomotive are all types of voluntary imitation.

There is scarcely an object which children see that they do not in some way consciously endeavor to imitate. For example, sight of an airship incites a boy to convert an umbrella into an air craft on a windy day; boats or trains are reproduced in a variety of ways, from paper representations to strings of chairs and vociferous whistlings and blowings off of steam from laughing mouths; a sling-shot of a new design is new for a day only; the next day every boy possesses one of his own manufacture. Even the gait of a cripple or deformed or aged person becomes the basis for imitation on the part of thoughtless children. Voice-trilling is a fine art among boys and girls, each one striving with all his might and main to reproduce the clear, not unmusical note in the best triller's product. Attitudes, postures, prejudices, likings and dislikes, sports, recreations, language barbarities (and niceties), ejaculatory expressions, — all find imitators in youths as in adults. Such imitated responses we may term the products of *spontaneous* or *social*

imitation, i.e., forms of imitation which while not voluntarily embraced come about as the inevitable result of the examples and influences and ways of thinking with which the child is surrounded.

Among the products of spontaneous imitation which come to have broad and lasting influence over the maturity as well as the childhood and youth of children should be mentioned religion, politics, and education. In the case of the first of these, religion, it is doubtless a matter of common observation to you that children invariably embrace the faith and belief and even the denomination of their parents. Rare indeed is it that a child is proselyted to another creed. So with politics. If the father be a Republican, the son is almost sure to be. Political affiliations are after all more the product of heredity and environment than they are of sound individual reasoning. Who of all the great mass of voters to-day could state the fundamental differences in belief which exist between the two great political parties of the United States? Or who of all the membership of churches could state why they affiliate as they do? But perhaps most interesting of all is the social imitation apparent in education. The son of a business man looks forward to a career in his father's business; a professional man's son often seeks a livelihood in the profession of his father, and perhaps his grandfather. More directly, the language of the family and the schoolroom is the language of the child; the habits of home and school become in like manner the habits of the child; the attitudes toward life or any specific problems or departments of life which youth assume are likely to be assumed as the direct heritage of the surroundings in which they grew up. Children tend to imitate the mannerisms and the language and the conduct of those whom they love; how significant therefore are the qualifications of the teacher who is to win their love and hence to modify their entire lives and mould them after her own!

Imitation in animals. While experiments performed with animals tend to show in certain cases slight evidences of

imitation in a rudimentary form, it is still doubtful whether imitation plays any significant part in their lives. You may have seen the chicks scurry to cover at the warning cry of the mother hen upon the approach of a hawk. In this activity one chick appears to imitate somewhat the behavior of the rest. It is doubtful, however, in how far there is any real imitative function operating, and in how far the response is purely to the instinct of self-preservation. It is very likely that the latter explanation is the correct one. At any rate, wherever there appears to be plausibility in assuming the presence of imitativeness in animals, such imitative tendency is always connected with actions in themselves instinctive.

In order to demonstrate the presence or absence of imitation as a significant factor in determining the behavior of animals, several hundreds of experiments have been made and reported by various investigators from time to time. It would be idle to attempt here to enter into a summary of any number of these. Perhaps the best known experiments are those performed by Thorndike and Yerkes and Lloyd Morgan. The first of these investigators, using cats as his subjects, found that they could get out of a puzzle-box no more quickly after watching a cat who knew how than they could before. In another experiment Thorndike demonstrated the inability of the monkey to open a box any more intelligently after seeing the experimenter open it than previously. Yerkes, working with dancing mice, concluded that imitation played no rôle in their behavior. In general, while a few investigators believe somewhat to the contrary, it appears that there is little if any evidence of any significant imitative capacity in the animal series. To be able to imitate seems to imply the existence in the mind of the actor of an *idea* of the result to be attained, — an existence which psychology is not yet ready to accept. It is true, however, that throughout the animal series there exist crude forms of instinctive imitation, which occur "when the sight or sound of one animal's performing a certain act

LESSON 19

THE EMOTIONAL SIDE OF BEHAVIOR

I. Emotions and Instincts

What to look for in the observation period

1. Evidences of feeling or emotion in the children
2. Incidents during the class period in which either marked satisfaction or marked dissatisfaction is apparent on the part of any of the pupils
3. Whether such factors as temperature of the room, attitude of the teacher, smooth or unsteady progress of the lesson, etc., have any bearing upon the affective side of pupils' behavior

The relationship of emotions to instincts. We have now completed our survey of the more important instincts of children, and in this lesson we turn our attention to a discussion of the *feeling* side of behavior. We have seen in earlier lessons that the nervous system of the child at birth has somewhere impressed upon it connection tendencies which impel action whenever the appropriate stimuli are presented. Sight of other children at play, for example, arouses the *play* response in any child; the onset of the hunting instinct leads the boy to indulge in *hunting* responses; the presence in the environment of small interesting objects compel the child of seven or eight to *collect*; and so with all the other forms of instinctive behavior: given the stimulus, the inborn tendency to respond in a more or less definite way operates and the child responds. Now you will recall that a part of our definition of instinct formulated in the fifth lesson (*q.v.*) pointed to an emotional accompaniment of instinctive activity. We said not only that an instinct is an inborn tendency to respond to definite stimuli in a definite way which is more or less common to all members of the species, but also that there was usually connected with the response some form of *emotional supplement*. Up to this

an unsuspecting comrade with the intention of shouting with all his might suddenly behind his shoulder, and the emotional state of the same boy who is interrupted at the most dazzling moment when he is opening his mouth to shout by the sound of his mother's seventh warning to hurry up and do his errand at the store! Or again contrast the mental states of the girl reading the last chapter of *Little Women*, and of the same girl peremptorily summoned from her reading to pare potatoes for the soup! Interest, in other words abides in the satisfying behavior and when interest ceases altogether there ensues a feeling of *ennui* which is the reverse of satisfying. It matters little what the nature of the work is in which we are engaged the emotional supplement of our behavior will inevitably be some degree of pleasure or some degree of displeasure, depending upon the presence or absence of interest, either immediate or remote.

The earliest emotions We have already seen that the child in the cradle smiles and gurgles when it is comfortable, and frets and perhaps cries when it is uncomfortable. Perhaps we could find no better classification of emotions than this the comfort or discomfort attending our work or our play. In the very earliest weeks of life the satisfaction or comfort of the baby is conditioned almost *in toto* upon the readiness with which all its immediate physical needs are ministered to. When it has been fed properly, there are evidences of satisfiedness when its clothing is neither too thin nor too plentiful there are similar evidences of satisfaction, when the temperature of the nursery is well regulated, the infant is likewise comfortable. Indeed it is probable that the earliest pleasures which the child experiences are after all merely the absence of pain or in other words vague, inarticulate feelings of content and well being. But very shortly the infant begins to react toward his surroundings in a more positive way. There are the bright colors in the carpet which are to be studied in fascination, there are the patches of sunlight upon the floor which chal-

tion with the attitude of the parent toward another child either of the same family or of another. If undue or unnecessary attention is paid to the other child, or especially if many protestations of endearment are vouchsafed to it, jealousy becomes at once apparent in the scowling face and perhaps the angry cry of the child thus cheated of his imagined rights. Another situation in which jealousy comes to the fore in child life is found in the envy of one child manifested toward a more fortunate one who possesses a new pair of skates, or a new sled, or a better cart, or a newer pair of shoes, or a bicycle, or a velocipede. Incidentally, we adults are by no means free from this vice, although through long years of denial and the cultivation of control and politeness we are usually more successful in covering up our envy of others than is the more naive and transparent child. In it, desire goes logically and inevitably over into jealousy. But not only are possessions the object of envy; skills and abilities are likewise often the causes of jealousy on the part of a child more meagerly endowed or less practiced. Consider, for example, the envy in which are held the child who can pitch the straightest and speediest ball, and the child who can learn his piece the most quickly, and the child who can climb the tree or flag pole the fastest, or swim the stream most easily. It is fortunate that the pangs of jealousy in the simple-hearted child are usually merged in the admiration which he genuinely feels for even his superior in skill or in possessions. Were it not so, unhappy indeed would be the lot of most children, enviers as well as envied. Still, childhood's mask of repression is so thin and transparent that the vital forces regulating behavior can never be entirely concealed.

Joy and sorrow. Childhood is happily rather a time of joy than a time of sorrow. The instincts, clamoring for expression, usually find little check in young people, and hence a feeling state of satisfaction or pleasurelessness is more predominant in them than is one of unpleasantness. It is true that in the past history of the race this condition

of childhood has not always obtained; nor does it to-day among all peoples. But in most modern civilized communities children are able to extract more happiness than unhappiness from life. Witness, for example, the exquisite joy of baseball, or of tag, or of hunting, or migrating, or of tunneling in the snow, or of sailing one's tiny boat on the pond, or of camping in the forest. There is little repression in all this; rather it is expression to the uttermost, and there is even a transcendent joy in the tired muscles and aching shoulders resulting. Even in fighting there is a sort of exaltation which is akin to joy in one's strength and pride in one's skill in defense or offense.

Still, there are times of despondency and unrest and uncertainty and even despair in the happiest childhood. The death of a pet dog, or cat, or rabbit, is likely to initiate a period of exquisite pain in the saddened young owner. Or again, the early days of school life, coming as they do after six or seven years of happy existence in which one was in large measure one's own master, not infrequently are days of pining for the free and unhampered life of the out-of-doors where the call of nature and of play is deliciously insistent. It may be that you can recall some glad, free day in your own early school life when you fled from the repression and constraint of the schoolroom out into the woods or the fields, but so planned your self-enacted holiday that the usual four o'clock hour found you trudging circumspectly home! Such is the nature of children! And then, too, consider the disappointment of young people when the long-awaited picnic morning dawns over a gloomy earth and above a raining sky; or when one's dearest chum is required to stay at home to help his father on the day above all others when a fishing trip to the adjacent stream had been planned. It is not necessary to multiply incidents of the encroachment of sorrow of a more or less poignant nature upon the otherwise joyous life of childhood. Look back into your own youth and you will doubtless find many a day which was made dark and dreary within by some repression or limitation

which interposed between what desire willed and what authority or incipient judgment decreed

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Look up and report upon as many theories of emotion as you can find references to
- 2 Observe an infant for half an hour paying special attention to the feelings of his behavior. In what ways were his apparent emotions related to instincts operating at the time?
- 3 Think back into your early childhood and try to recall the happiest and the unhappiest days which you ever lived through. Introspect and endeavor to determine why certain experiences were far more tinged with happiness or with sorrow than were others

THE LESSON APPLIED

- 1 What would be some situations in the schoolroom which might favor the outcropping of the jealousy response? Through what indiscretions might the teacher herself be the innocent cause of such response? What faulty methods of teaching might bring it to pass?
- 2 Should a teacher strive always to make school work so interesting to the children that they are perverse always happy? Is there any pedagogic virtue in chronic dissatisfaction and unhappiness on the part of the pupil? Where such chronic disaffection exists is it necessarily the fault of the teacher?
- 3 Does the socialized school as you know it, tend to keep children interested and happy in their work? Does it also relieve the teacher somewhat?

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the stairs. Or it may be that you can recall the trepidation with which you used to pass the cemetery at nightfall, as though the spirits of the departed might accost you and require placating at your hands. Parents are very often guilty of increasing this natural, instinctive dread of the dark which exists in all of us by locking their ill-behaved children in dark closets or lonely rooms as punishment for some misdeed committed. Besides, they do not hesitate to threaten them on occasion that the goblins, or the "hogy man," or some other spirits of the darkness and night will carry them off if they fail to conduct themselves discreetly. Thus in one way or another the dark is made to hold added terrors to the credulous mind of the child. Ghost stories told during the day may linger in the unconscious memories at nighttime and multiply this fear of darkness a hundred fold.

Thunder storms, too, are very often sources of dread to children who are led to imitate reflexly the nervousness of their elders. Consequently even mild storms may subsequently and habitually arouse in them the most exquisite fear and the most unhappy foreboding, which are never conquered and which may actually come to color the whole of their mental lives. On the other hand, children growing up among older people who show no agitation during thunder storms may go through life without ever being really afraid of this remarkable phenomenon of nature. It is not our purpose here to extend the list of situations in the face of which fear is likely to be aroused. Suffice it to repeat, as we have already said, that nearly all children are more or less fearful of something or somebody at some time or other in their early years. They may, and often do, outgrow one fear, only to fall victim to another. In the case of timid children, or those of a nervous diathesis, life may become at times utterly miserable owing to the number and persistence of their fears.

Phobias. Often a fear comes to be chronic, or morbid, in which event it is known as a *phobia*. Usually the roots of

these morbid fears are to be found far back in the early years of one's life, and closely associated with unfortunate, or unhappy, or tragic experiences at that time encountered. For example, a morbid fear of fire (*pyrophobia*) persisting into and through adult life may have been caused originally by an experience with fire which can never afterward be effaced from the nervous system. Being in a burning building, for instance, or being set on fire by lighted matches while playing with them, or hearing the screams of animals perishing in the flames, may become in the mind of the nervously constituted child a rankling wound, as it were, which never heals and which remains always a source of much mental suffering. Other phobias besides the fire phobia include morbid fears of death, of dead bodies, of animals, even cats and dogs, of crowds or of solitude, of high places or enclosed places or open places, — all of which, together with scores of other fears, are to be met with in certain individuals. Dr. Hall has been able to tabulate several hundred distinct fears found in human beings in more or less morbid form.

the next minute. There are, however, a great many aspects of our behavior in which the attendant and underlying fear response, though mild and passive often, is yet permanent and fixed throughout life, exerting always a salutary influence over us. Such fear we may call positive in nature. Among fears of this sort may be mentioned the fear of disgrace which keeps us honest and honorable; the fear of the law which keeps us obedient and law-abiding; the fear of failure which keeps us always employed to the uttermost in our vocations, and the fear of social disapproval or censure which keeps our social consciousness always keen and alert. In addition to these there are a considerable number of religious fears and sex fears which play important and positive parts in the lives of all normal adult individuals.

Anger. If you have ever observed very closely the behavior of two boys engaged in a controversy you have marked the flaming face and the blazing eye and the flushed cheek and the clenched fist and the quick breathing which were the physical expressions of their anger state. It may have occurred to you that here was an inexhaustible fountain of energy which was running to waste with every blow delivered and with every breath drawn. In the infant the earliest symptoms of this emotion of anger usually appear with delay in the forthcoming of food or in the ministering to other physical wants besides hunger. In the very young child the outward manifestations of the anger state include the spasmodic crying, the convulsive opening and closing of the hands, the clutching of the clothing, the kicking of the feet, and the rocking of the body from side to side. In later infancy and in childhood the anger state is likely to appear whenever an instinctive tendency has been repressed or thwarted, such for example as the removal of a toy or other desired object, or the inhibiting of privileges ordinarily enjoyed. The failure of any physical activity to find its desired or customary outlet tends to arouse the fighting instinct, and with it its natural correlate, the anger response. You have probably witnessed the operation of it in the behavior of the hoy com-

peled to remain at home and hoe potatoes the while his comrades hie them away to the trout stream or the woods; or in the girl whose motives or actions have been quite misjudged by her fellows; or in children generally who are cheated, or laughed at, or made sport of, or wronged, or teased, or misjudged in any way. In the older child, however, the expression ordinarily given to the anger state is more direct and purposeful than is true of the younger. The latter cries bitterly, strikes out blindly; the former restrains his tears and strikes more advisedly. He deems it cowardly to show signs of weeping; the manly thing is to strike and strike true. In the case of the girls it is similarly necessary to repress the tears, but instead of resorting so invariably to fisticuffs they more usually seek relief and satisfaction from their pent-up emotions by uttering bitter words, or by "cutting" the offender, or by going out of their way to do unkind things. Often, it is true, the bitter words and unkind acts are repented of immediately they have been said or done, it may be in sackcloth and ashes, and it is ordinarily true that children rarely let the sun go down on their wrath. Such is childish anger.

In adults, the anger state seeks expression in a multitude of ways, even as it is called forth by a multitude of situations. If you will endeavor to introspect a bit you will doubtless be able to make a somewhat extended list of all the situations which arouse anger within you. It may be the witnessing of some one beating a horse; or it may be the receipt of injustice on your part; or it may be the discovery of deceit and trickery and cheating in any department of life; or it may be the slanderous word spoken of another, or the thoughtless opinion expressed unadvisedly; or it may be the witnessing of any of the multifarious and innumerable petty meannesses which we encounter from day to day in our association with neighbors, or clerks, or business men, or officials, or legislators, *et al.* In general, anything which is antagonistic to our sense of justice may become the stimulus to wrath and indignation. Constructively, such anger

LESSON 21

THE EMOTIONAL SIDE OF BEHAVIOR (continued)

3. Love and Sympathy

What to look for in the observation period:

1. Whether the children seem to be sympathetic and considerate in their attitude toward any deformed or defective child in the classroom. What part do age and previous training play in determining the behavior of children toward unfortunates?
2. Whether the children are keen at appreciating a humorous situation which may chance to arise.
3. Evidences of the aesthetic appreciation of older as compared with younger children.

Love. You have without doubt chanced to witness the interesting spectacle of a watching face pressed closely against the pane, its eyes turned anxiously and expectantly up the street in the direction whence a mother should come. It was the face of a child overcast with impatience at the delay of the returning mother, and yet lighted up with love for the absent and tardy one. If you watched this little tragedy long enough you were probably rewarded in due time by beholding the mother coming hurriedly down the street, and by the instantaneous transformation which her coming wrought in the eager face. From being impatient and perhaps cross, it was miraculously cleared and the light of a great joy suffused it. Tear traces were dashed away, and two flying feet and wide-spread arms sped down the walk to find solace and comfort in the arms that never failed. Such is the power of love. Other women might have passed and repassed the window all the afternoon, and yet none could satisfy save the one.

In its earliest manifestations, it is true, the germinating love response of the infant is largely overclouded by the purely physical needs of the body. A mamma is to make

states as are called forth by noble aspirations are invaluable to the ultimate salvation of the world for justice and truth and fair play. Without such reservoirs of energy and such stimuli to righteous conquest and the conquest of righteousness society would lack one of its greatest driving forces for it is one of nature's most happy provisions that the anger state may be sublimated above the gross physical combativeness and become the incentive in all of us for the overcoming of all injustice and the conquering of all social evil in a world wherein there is still ample place for such righteous endeavor.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Report upon any observations of fear response in children
- 2 Recall from your own childhood all situations or objects which inspired fear within you. What is your present attitude toward these same stimuli?
- 3 Do you know of any case of morbid fear or phobia in any of your acquaintances? If so can you account for its origin?
- 4 Make a list of all the stimuli which arouse in you the anger state
- 5 Report upon any observations which you may chance to be able to make of the operation of anger in children

THE LESSON APPLIED

- 1 Is the motive of fear ordinarily a desirable one to which a teacher may appeal? How has the attitude of educators changed in this respect in recent years?
- 2 In how far is it possible for the influence of the schoolroom to be exerted toward directing the fear and anger energies of children away from the more crassly physical and toward the higher social or moral or intellectual?
- 3 Dr. Hall says We fear God better for having feared thunder. Can you justify this belief and its implications?
- 4 Are schoolyard fights ever justifiable? If so under what conditions? Do they ever offer opportunity to the teacher for salutary instruction?

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one comfortable, and that only. A mamma is the person who feeds one, lulls one to sleep, keeps one's clothing comfortable, gives one drink, etc. The baby's love for the mother is not dissociated from the general satisfaction which he experiences from her tender and dependable ministrations. He is lonely when the mother is absent, impatient at her delay in hastening to relieve him, happy when she is present and looking fondly and compassionately down upon him. Nothing else matters to the very young child. But as he grows older and learns to run about by himself the close relationship between the mother's care and the mother's indispensability no longer exists; one is able to a considerable degree to care for one's self. But now dawns the love genesis in the child's heart. From being a slave to his physical wants, the mother now suddenly becomes an indispensable companion and lover, a source not only of solicitude and sympathy over one's childish troubles but a sharer of one's joys and confidences as well. It is this stage in the development of the love response which we had in mind above when we referred to the childish face pressed against the pane.

And yet how soon the stage comes during which even the mother no longer satisfies; happiness and sympathy are sought now in the bosom of the group or gang, and the advances and protestations of the mother may be apparently disliked and purposely avoided. This is especially likely to be true when such manifestations of affection are offered in the presence of one's boyish chums. Not that the love for the mother is any less, rather the world of experience is opening before the child so rapidly and deliciously that he is unable to sift out one value from another, and in the shuffle which he does endeavor to make the love for the mother, as being such an obvious asset, is likely to sink temporarily into the background. This stage does not, however, continue very long. Sooner or later all the earlier passion for the mother love floods back into the life of the child of the world of experience, and once again the world for him turns concentric about the mother. Indeed, it did so turn all

the time, in spite of the boy's growing interest in others. Throughout his whole life this love and veneration for the mother remains one of the strongest emotions of his being, and one of the surest guides of his conduct in all situations. Recall, if you will, your own early attitude toward your mother; introspect into your present attitude; project your present attitude into the future, and then see if that love which you bear her or her memory must not inevitably be ever green and fragrant.

Sympathy. Out of this early association with the mother grows the emotion of *sympathy*. Kirkpatrick calls the child the most sympathetic of all creatures, and offers as an explanation of this seeming paradox the fact that children are unable in their earliest years to differentiate between animate and inanimate objects, and consequently tend to interpret the whole of nature and the whole inanimate world as a part of themselves, hence to be sympathetically acted toward. You have certainly noted this strange attitude in children playing about the yard. A broken flower may become the stimulus which incites the four-year-old to pour out his sympathies upon its unhappy state and perhaps bind it up. In a similar way and from a like motive you will occasionally find children patting the floor or the walk as though it had been injured, and muttering words of pity at its state. Trees and stones share likewise in this animistic belief of young children, as do also sticks and toys and other small objects in the environment. This is surely a very charming cult in childhood, although its duration is all too brief. Soon the child learns to isolate his own body and feelings from the surrounding medium, and henceforth he is no longer an infant but a child. Individualism and selfishness creep in as rapidly as the earlier animistic sympathy begins to wane. Is the animistic sympathy itself selfish in nature?

And yet if you have ever observed boys engaged in such amusing and absorbing pastimes as pulling out the wings from the bodies of flies, or robbing birds' nests, or killing

squirrels, or tying cats' tails together, or enclosing their heads in paper hags, or intent upon some other form of juvenile harharism, you will perhaps be inclined to question the natural sympathy of children. How prevalent does cruelty appear to be among young children? You have seen them hantering a feeble-minded child and plaguing and teasing younger children, and calling their mates by nicknames which are altogether too suggestive and which may even make the appellants cringe under them, and breaking or stealing or hiding toys of others and in other ways behaving more like cruel savages than sympathetic humans. Values appear to be in terms of what enjoyment or satisfaction or privilege one can get out of others, rather than what degree of helpfulness one can impart to the lives of those about him.

All this is true. Older children are cruel and selfish, and indifferent, and thoughtless, and hard. But the explanation lies not in any *innate* tendency toward cruelty. The boy does not pull out the wings of the fly for the purpose of making the fly suffer. He is actuated by another motive, namely the desire to see what the fly will be able to do under such limitations. Curiosity prompts his act. Nor does the boy rob a bird's nest just to behold the anguish of the mother and the father birds nor push the cat's head into a paper hag for the purpose of gloating over the animal's suffering. The explanation of his seeming brutality lies rather in his curiosity and his delight at beholding well known animals do unaccustomed things. The whole animate world from the lowliest fly to the hunchback or the idiot, is for him a sort of complex jumping jack, as it were, which he delights in manipulating at pleasure. Once, however, his experience has been broad enough to enable him to appreciate the feelings of his victims, or once his imagination has been sufficiently appealed to to arouse his dormant sympathies for them, then the cruelty appears less and less and thoughtfulness takes its place. During the early years of life his sympathies are very obviously limited because of the lack of these two vital forces in his conduct — experience

and imaginativeness. The former is to be acquired only with time; the latter in consequence of wise instruction on the part of his elders. Lacking these two things the child remains an incorrigible savage in so far as his attitude toward other animate creatures of lesser stature are concerned. Now you can understand why it is that children are unable to appreciate death or sorrow or misfortune of adults: they have neither the experience nor the imagination to make it possible for them to put themselves in the places of the bereaved or the injured or the wronged. Sympathy is thus an emotion dependent upon time and relative maturity.

Two other lesser emotions: the aesthetic and the humorous. It is said of the Swiss mothers that shortly after the birth of their babes they hang a variegated cloth over the foot of the cradle in order that the wandering eyes of the infant may be attracted to the bright object. Pestalozzi tells us that the child lies for hours at a time in delighted contemplation of the cloth flowing in the breeze. You have frequently remarked the interest in bright colors which most children manifest; even their toys are bright in the reds and purples and greens. Pictures delight their eyes and compel their imagination. Not the pictures of beautiful landscapes and temples and saints, but rather pictures of dogs and cats and animals in general and children like themselves — these are the favorites. Real critical appreciation of art comes long years after. If you will study the drawings made spontaneously by young children you will find that their chief interests lie in trains and boats and people and animals with which and whom they are familiar and at home. In the realm of music, too, the aesthetic appreciations of children are far from those of connoisseurs. The discords produced from a long-suffering piano, or drawn from a non-descript harmonica, or a jew's-harp, or even from an inverted dishpan are infinitely more satisfying to them than the performance of a virtuoso. Their oral attempts, too, leave much to be desired in their voices and appreciations before they can become true artists. In like manner the

stories which they revel in are not those built skillfully and logically about a noble theme, as is the case of real art, but rather they are often the most illogical, and the least skillful, and the farthest removed from artistic in their execution.

And yet some day out of all these barbarities of drawing and these discordances of music and these grossnesses of judgment will develop the aesthetic emotions of the next generation. Gradually the eye will be trained to judge and the ear to interpret and the hand to fashion and the senses to discriminate.

Of the humorous emotions we need pause to say but little. It is so obvious to all of us that childhood is the age *par excellence* of humor and laughter that the fact requires no discussion. Wild uncontrollable, and boisterous, the humorous side of child behavior sweeps us all along with its very contagiousness until we are ourselves young again. And even the sage and the philosopher are constrained to play "peek a boo" with the little child.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Observe an infant for several minutes while the mother is engaged about the room. Do you detect any evidence of the genesis of the love response?
- 2 Report upon any cases of cruelty either to other children or to birds or animals which you find boys engaging in. Can you determine the motives behind the response?
- 3 Make a collection of the spontaneous drawings of a five-year-old during an afternoon. It will be necessary of course to see to it that pencil and paper are among the available articles near him.
- 4 Report upon any instances of the humor response in children which may come under your notice.

THE LESSON APPLIED

- 1 In how far does hero-worship in boys and girls develop out of a sympathetic understanding of the life and deeds of their heroes? Is every child at some time or other likely to be a hero worshiper? Should it be a function of the school to encourage such worship?
- 2 What is the value of the somewhat recent inclusion in the curriculum of bird walks, nature readers etc. and of the organization in connection with the work of the schools of bird clubs, animal protective

LESSON 22

HEREDITY

i. General Lesson

The problem stated. We turn now from a consideration of the instinctive endowments of the race to a discussion of the general subject of heredity. In a sense all of the instincts and their accompanying emotions are a heritage from the past life of the race. They are, however, the echoes of a far distant past, so far indeed that the responses which they engender in the individual are sunk in the experiences of the endless number of individuals which have preceded him. They are stamped indelibly upon the nervous system because natural selection has operated in past ages to preserve such individuals as possessed them. In the case of heredity, however, we are dealing with a more specific and less remote endowment. Heredity in the strict sense concerns itself primarily with the influence of family, sex or race. Its problems include the influence exerted by parents and grandparents upon the present individual, they include the probabilities of inheriting certain given physical or mental qualities from near ancestry; they include the relative weight of nature and nurture, or heredity and environment, in the development of the individual; they include the influence exerted over one by sex or race. They involve questions of training, education, marriage, and every other social relationship. If we could determine all the forces of heredity and predict their appearance and strength in every child, a large part of our educational process would be simplified and we should be working far more intelligently and to wiser purpose than we are at present able to do. Unfortunately, however, our knowledge of this important side of life which is born in people is not so dependable as we might wish.

Commonly observed facts of heredity. Still, there are

certain facts about inheritance of traits and capacities which are generally accepted by all of us, for the very satisfying reason that we have observed them ourselves to be true. You are familiar with the old saying, for example, that a child whose characteristics or abilities are like his father's is "a chip off the old block." You have also heard such expressions as "like father, like son"; "it runs in the family"; the child is "the very image of his mother"; etc., and have experienced the truth in a general way of such popular axioms. Often you have noted the similarity of the features of a child with those of one of his parents. You have been struck, too, with the color of eyes and the shape of nose, or the color and texture of hair, or the general stature of children in whose parents the same traits were observable. It is probable also that you know of more than one family, possibly you yourself belong to such, in which the boast is commonly made that everybody in it has always lived to a good old age, and the ninety years of the maternal grandfather or the ninety-five of the paternal grandmother, or the venerable hundred of a famed great-grandparent are commonly cited in defense of the claim. Left-handedness appears to be another characteristic which recurs in families, although it is not improbable that early imitation of the left-handed mother may be a factor in determining the handedness of the child. It is likely, however, that the recurrence is dependent upon certain modifications in the nerve structures which cause left-handedness to be really inherited in the family sense, in contradistinction to the usual racial heredity of right-handedness. It is a matter of common observation also that the children of one or both deaf parents are frequently, though not always, deaf; and that often the descendants of parents who have ocular irregularities or defects are similarly handicapped.

When we come to an analysis of mental and moral characteristics, however, we are less sure of our ground. True, you have commonly observed that certain mental endowments, such as moodiness, and quick temper, and sluggish-

one could not say advisedly, without careful study of the case, in how far the shiftlessness observable in the children is inherited from the father and mother, and in how far it is the result of their being brought up in an environment wherein they have never been taught to assert themselves aggressively and to take a positive outlook upon life and its possibilities. It is only in the case of the extreme variants from the normal, i.e., the positively idiotic or imbecile, that we can say with greater assurance: thus much is due to heredity, and thus much to environment.

Are diseases inherited? You doubtless know of cases where the children of a tuberculous mother or father "went into consumption," as the saying goes. Or you have heard the neighbors say: "Tuberculosis runs in the family; John is doomed," or make predictions to that effect. As a matter of fact the heritability of specific disease is almost wholly denied in the light of modern scientific medicine. The explanation of the instance which is perhaps even now crowding into your mind wherein a child of tubercular parentage is already in the grip of the Great White Plague lies rather in the close association of that child with his infected parent than in any inheritance of disease from him. Children are very susceptible to disease, and their resistance power is extremely low in the early years of life. Let a child be associated with a tuberculous mother or father in the closeness of filial association during the first years of its life, and it is almost certain to acquire or take the disease from the parent, or from any other member of the family who chances to be infected with it. Barring a few eye infections and ocular weaknesses and certain nervous predispositions, which are not, properly speaking, diseases at all, it is probable that disease is rarely if ever transmitted through the germ plasm from parent to child. This does not, of course, contradict the often observed fact that children whose parents suffer chronically from tuberculosis or other disease are more likely to fall themselves victim to that disease than are children in whose heredity there is

no such tendency. This is due to the constitutional weakness which predisposes the infant to tendencies to the specific disease, and reduces appreciably in it the naturally low resistance power common to all children. Thus, about all we can say in defense of the popular superstition that disease runs in families is that the tendency to take a family disease is heightened by the weakly constitution of a child of sickly parents. Beyond this there is little truth in the contention, and absolutely none in the superstition that specific disease is inherited. The germ plasm is continuous and immortal, and absolutely isolated from any possibility of infection directly with zymotic disease.

All this would seem to imply that if we can properly safeguard the weakly child from a disease environment we can be more sure of saving him from the clutches of the hesitating malady of his father or his mother. This is eminently true, and there are many social agencies nowadays which take note of this fact and devote all their energies in an endeavor to improve the health environment of weakly and sickly children, often to the extent of removing such children from their homes and placing them in more salutary surroundings for a season.

In the case of nervous disorders, as we suggested above, the importance of heredity cannot be overestimated. From parentage in which there have been taints of insanity or nervous instability or neurotic tendencies are almost certain to issue children who tend toward those peculiarities. Thus, the children of parents who are nervously unstable, or who are mentally disordered such for example as being subject to neurasthenia or to insanity, will hear in their own nervous systems the weaknesses of their parents. These inborn weaknesses may or may not become pronounced during the lifetime of the individual. In case of a thoroughly wholesome environment and hygienic living, with tempered work and relaxation, persons of neurotic heritage may often continue tolerably normal throughout life, but let the environment be one of worry and dissipation or of

untempered toil or of unwholesome surroundings, and the lurking disorder is likely to become pronounced at any time. Generations of well ordered living in a family line thus subject to nervous disorders are required before such taints are obliterated and the original stability of the nervous system restored.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Distinguish carefully between heredity and environment.
- 2 Can you identify any of your own physical characteristics or moral and mental capacities with those of either parent, or any of your grandparents?
- 3 Can you illustrate this lesson by describing to the class the peculiarities of any family in your own neighborhood wherein the influences of heredity are to be seen in any particularly marked way?

THE LESSON APPLIED

- 1 Is there any possible danger in interfering with the normal left handedness of a child?
- 2 Since the heredity of children is so varied what is to be said in favor of individual as opposed to group instruction? What are the practical difficulties in the way of any wide introduction of the former into our schools?
- 3 What basis does vocational or prevocational guidance have in human heredity?
- 4 What efforts are now being made by school administrators to provide for more homogeneous groupings of children in the schoolroom according to their natural abilities?

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LESSON 23

HEREDITY (*continued*)

2. Three Famous Laws of Heredity

IN no possible field of investigation is there so much of fascination as in the field of heredity, either human, animal, or plant. You are doubtless familiar with some of the interesting results which have been obtained within recent years in the production of new and improved breeds of animals and plants. Finer, more luscious fruits and stronger, fitter animals have been evolved by scientific breeding and grafting on the part of men devoted to experimentations in heredity. Even in ancient times, the Romans and the Egyptians and other early peoples knew certain fundamental facts concerning the science of breeding although their knowledge was largely hit-or miss and was never built up into a body of dependable practice. It remained for the scientific movement of the last century to awaken men to the limitless possibilities of heredity, and to incite them to set to work to amass through experimentation a body of exact knowledge of hereditary principles. It must be confessed, however, that thus far only a beginning has been made in this interesting undertaking, although thousands of workers all over the world have been and are engaged in it. The problems of heredity are so elusive and so difficult to approach that it requires years of careful experimenting and study for the establishment of dependable principles. The result is that while we possess at the present time a considerable number of interesting theories and principles of heredity, we are not able to say that the greater part of them are universal and invariable. In fact, there appear to be exceptions to all of them, either because the theories themselves are inexact, or because it has been found impossible to discover perfectly pure, un-

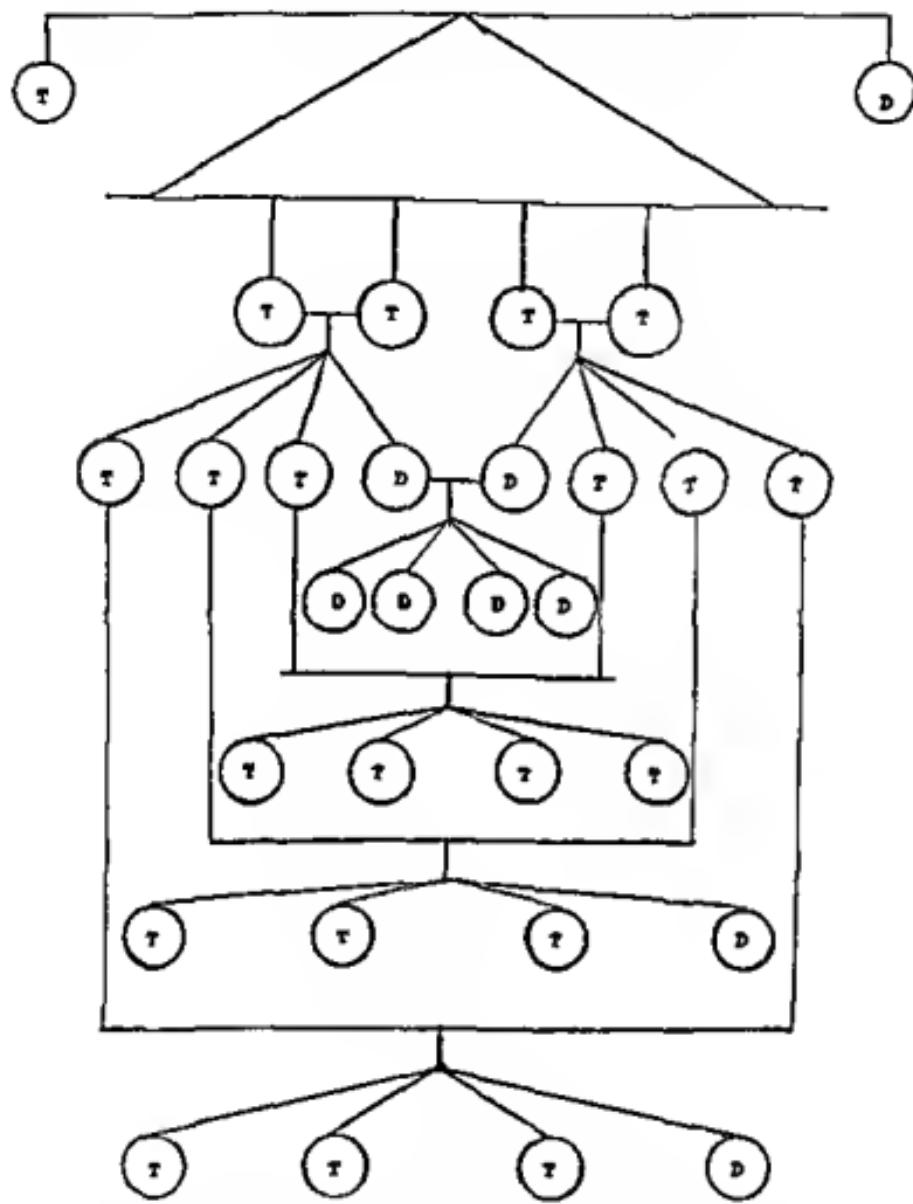


FIG 4 MENDEL'S LAW

T = peas of a tall variety D = peas of a dwarf variety. Tall peas are seen to be dominant over dwarf. A study of the diagram will indicate the results of crossing the two sorts (Sketch by the author)

generation now made its appearance in the ratio of approximately one to three. Hence Mendel concluded that in addition to the dominant element there must also be a

recessive element present in a latent form which tended to come into dominance in approximately one out of three of the progeny in the second generation. Further experimentation with smooth and wrinkled peas, and with yellow and green peas, and with colored and white peas, showed the same phenomenon; i.e., that in the first generation of crossing only the one element reappeared in the offspring. Thus, smooth peas were found to be dominant over wrinkled, yellow over green, and colored over white, etc. In the second generation, too, he found wrinkled peas appearing among the smooth in the ratio of one to three, and in like manner green among the yellow and white among the colored, and always in the same approximate one-to-three ratio.

Carrying on his experiments with these peas of the second generation, one out of four being dwarf or wrinkled or green or white, depending upon the sort of peas originally selected as parents, Mendel found that in the case of those in which the recessive element became dominant in the second generation all subsequent descendants bred pure; i.e., that from the dwarf or wrinkled or green or white peas crossed with others of the same parentage came only dwarfed or wrinkled or green or white offspring. On the other hand, from the three other sorts of peas which remained smooth or yellow or colored in the second generation, he found in the third generation that one remained pure, always thereafter breeding true, while the remaining two continued "hybrid," giving in subsequent generations the ratio of three dominant to one recessive.

Mendel formulated his discoveries into what has since become known as *Mendel's Law*. It may be stated thus: hereditary characters are ordinarily independent elements which — after the first generation, in which one element is dominant over the other — tend to reappear in the ratio of three dominant to one recessive in the second generation, the recessive breeding thereafter true, but the dominants repeating the history of the first generation in two cases and becoming pure dominant thereafter in the third case.

It is evident to you that if the same relationship of dominant and recessive characters obtains for human beings as obtains for garden peas the significance of the Mendelian Law is very great indeed in the heritage of children. Desirable dominant characters are to be preserved so far as possible while undesirable recessive characters are to be concealed or on the other hand undesirable dominant characters are to be eliminated and desirable recessives preserved. Obviously the only way in which to accomplish this is to prevent admixture of strains whose offspring will tend to bring into prominence the undesirable character. Already we have laws in a great many States which forbid marriages among cousins in order to offset any likelihood of undesirable characters meeting their correspondents in offspring of the same original strain. Suppose for example that a normal woman of a strain in which there is imbecility marries a man who is likewise normal but coming from the same strain. The result in the children would be probably weak mindedness and perhaps positive imbecility. The same might be expected to hold true of parents in whose common ancestry were tendencies toward insanity or neurosis or constitutional weakness or epilepsy.

But not only is there danger in consanguineous marriages that an undesirable character will be intensified in the offspring a similar danger exists in marriages of people who are quite unrelated but in whose ancestral stocks there exists weaknesses of the kind mentioned. Hence the problem of being well born is a tremendous one which becomes the more complex the further we inquire into it. It is certainly a fortunate tendency in normal human beings that only normal marry normal it is likewise true however that ordinarily only feeble minded marry feeble-minded. There are dangers in both tendencies in the first because of possible mutual weaknesses which are recessive and which tend by union to be intensified and in the second because as Walter remarks Nothing plus nothing equals nothing from feeble-minded parentage only feeble-minded progeny

can issue " The latter condition of marrying furnishes the most alarming possibilities in heredity, both because of the persistence of feeble minded lines and because the progeny of the weak minded is usually very prolific.

Every child born into the world deserves to be well born in order to stand a fair chance in the struggle for survival and advancement. Not all children, however, are well born. Very likely among your own range of acquaintance there are several families in which you would hesitate to say that the children were well born. You, of course, are aware of the immense expenditure which your State is obliged to make every year in order to support and maintain and train as far as possible those of its citizens who are unable through unfortunate heritage to maintain themselves. You are cognizant, also, of the cost in money and the expenditure of effort and time required in the caring for those in the public schools who (very often) through lack of being well born are unable to keep pace with their fellows, and have to be instructed in special classes or else removed entirely from the public schools and placed in institutions. On the grounds of expenditure alone, without taking into account the personal and sentimental aspects of such mortality among children, society would be well repaid if every child could be well born. Mendel's principle of the dominant and recessive characters may come in time to be a factor of significance in making it possible for all children to be thus "created equal." The fact remains however, that such human institutions as marriage are very delicate problems to discuss and still more delicate to modify or attempt to control.

It should be noted in passing that wherever Mendel's Law has seemed to apply to the inheritance of human characteristics, according to the best attested reports, those characteristics have without exception been abnormalities rather than normalities. Thus, white blaze in the hair, short fingeredness (brachydactyly), etc., seem to follow the Mendelian hypothesis.

Galton's Laws Among all the inquirers into the nature of human heredity none has been more interested and interesting than Sir Francis Galton, himself a cousin to Charles Darwin. The methods which Galton employed are, however, open to some criticism because they were based rather upon statistical information than upon actual experimentation and study of definite pedigrees. Since Galton's time the statistical method has, however, become in the hands of the eugenists a very valuable instrument in the investigation of hereditary principles. Galton's first law, thus established, he termed the *Law of ancestral inheritance*. According to this principle, which he believed to be justified by his observations and inquiries, the contribution of the immediate ancestors to the offspring exceeds that of any other ancestors and *equals that of all the others*. That is, every child inherits approximately one half of his characteristics from his two parents, one fourth from his four grandparents, one eighth from his eight great grandparents, one sixteenth from his great great grandparents, and so on back indefinitely in geometric ratio. This is certainly a very satisfying and simple explanation of all the intricacies of heredity, but unfortunately it fails utterly to explain marked variations from the near ancestors in children and likewise fails to account for occasional almost perfect duplicates of parent or grandparent and child or grandchild.

Another law proposed by Galton, the *Law of filial regression*, while it is commonly observed to be true in large numbers of cases, is open to somewhat the same criticisms as his other law. According to his second principle, Galton concludes that all children tend to approach a type physically and probably mentally. That is, parents of average height will produce children of average height, children of very tall parents, on the one hand, tend to be taller than the average, but not so tall as their parents, while children of very short parents tend to be shorter than the average, but not so short as the parents. This has been nature's

invalidated when applied to a single family. The intricacies of human heredity are so complex and the variations in parents and ancestral lines and strains so labyrinthine that in all probability we have scarcely yet scratched the surface in searching after nature's ultimate and invariable laws.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Study your own characteristics with a view to determining from which of your parents you inherit the more if either. Can you determine the extent of your heritage of characteristics from a grandparent?
- 2 What is meant by the term "eugenics"? How does it differ from "euthenics"?
- 3 Be prepared to report in class upon some interesting experiment in animal heredity to be found in the following list of selected references.

SELECTED REFERENCES

- 1 Castle, W E *Heredity*, chap 8
- 2 Jewett, F G *The Next Generation*, chap 5
- 3 Popenoe P, and Johnson R H *Applied Eugenics*, chap 5
- 4 Walter, H E *Genetics*, chap 7

whose innate abilities or disabilities are known exactly. By stressing individual instruction and dealing with each child according to his inner capacities and abilities we might surely within a very few years raise up a cumulative crop of geniuses such as the world has never known! And fancy, too, how the descendants of our geniuses in the next generation would overtop the attainments of their mediocre fathers! Unfortunately, however, the evidence supporting the heritability of acquired characteristics is almost wholly negative, and it is extremely likely that we shall have to be content to continue our training of children for a good many generations yet to come along somewhat the same fashion as at present.

Lamarck's theory. In the meantime this question as to the heritability or the non heritability of acquired characters is agitating a great number of students and investigators in heredity. At the present time the thoughtful and dependable opinion of investigators is divided very strongly on the question, with the weight of established evidence on the side of the opposition, i.e., of those who hold that such characters are not inherited. The supporters of the affirmative camp, that is, of those who admit the heritability of such characters, are known as the Neo-Lamarekians, after the chief proponent of the theory. According to Lamarck, the whole means of evolution of a species are due to the inheritance through desire or need, use or disuse or change in living conditions, of acquired responses. Gradually such accretions of the experiences of numberless generations must result in the slow evolution of the species concerned.

Weissmann's theory. The name which is inseparably linked with the opponents of Lamarckianism is that of Weissmann who, with his followers, deny the possibility of the inheritance of acquired characteristics and maintain that there is a complete separation between the germ cells and the body cells. Hence, while external influences may affect the body profoundly, such influences are not trans-

mitted through the germ cells to the next generation. It follows from this that only such influences as are able to modify the germ cells can have any effect upon progeny. As to what such possible influences over the germ cells are, we are still relatively ignorant. But your own observation has certainly been extensive enough to assure you of the truth of the contention of Weissmann that acquired bodily characteristics cannot be inherited. For example, the children of parents who have acquired deformities such as the loss of a hand or a limb are not for that reason deformed. Nor are the descendants of parents who acquire round shoulderedness or bow-leggedness or frightful scars effected by these characteristics in their parents. As Conklin very aptly illustrates it "Wooden legs do not run in families, but wooden heads do." The former are acquired, while the latter are innate. Suppose for instance, that the future sons and daughters of the thousands and thousands of soldiers who have lost arms or legs or other parts of their bodies were doomed to inherit those identical features in coming ages. What a spectacle of future unhappiness we should be forced to contemplate!

A very interesting series of experiments have been conducted by Weissmann in demonstration of his disbelief in the theory of the Lamarckians. For twenty generations in succession he cut off the tails of a large number of mice without ever being able to produce in their descendants tailless mice. In more recent years other interesting experiments have been performed on rabbits, Belgian hares, guinea pigs, etc., always with the same apparent substantiation of Weissmann's position.

It is, however, a very difficult matter to experiment upon the transmission of *mental* as opposed to *physical* characters, and as yet little has been done in this field. About all that can be said, pending the results of further investigations in heredity, is that acquired mental characters are probably no more transmitted to subsequent generations than are acquired physical ones.

Frances Gulick Jewett, in her interesting little book *The Next Generation*, reports the following pointed conversation which she had with a neighbor.

A young mother expressed the greatest disappointment over the fact that her daughter was not musical.

"I simply cannot understand it," she exclaimed. "Before the child was born I spent hours every day practicing the piano, because I was determined to have at least one musical person in the family. Does n't science say that we can stamp our children this way or that before they are born? I have proved that we can't."

"Has she no musical ability whatever?" I asked.

"None at all," was the answer, "neither have I, neither has her father. That's precisely why I practiced so. I was trying to help the family out. I wanted to put musical power into it."

"And you failed?" I asked.

"Absolutely," was the answer.

"The trouble was with your own lack of information," I continued. She looked surprised, but I gave her no time to speak. "The process of evolution proves that we stamp our children with what is within ourselves not according to what we make ourselves do. The doing is n't going to stamp children before they are born, it is the being that does it. Is n't your daughter rather persistent?"

"Indeed she is," said the woman, looking at me in astonishment. "She's the most persistent thing you ever saw. But what gave you the idea? You haven't even seen her."

"No," I answered, "but from your story I see that you yourself are persistent, not musical. Where was her musical taste to come from if neither you nor her father had it? You must n't blame her. Laws of nature are responsible."

It would be hard to find a more interesting and significant story than this. The same author calls attention also to the fact that for more than 300 years the people of China bound their infants' feet, but were never able to produce a generation of deformed feet in their daughters; each generation had to be bound just as the preceding had been. So, she adds, a woman might crimp her hair from the cradle to the grave without giving birth to a child with curly hair. Alas for the parents who longingly covet for their own

development, as we have seen Weissmann and his followers, the Neo Darwinians, take for granted the gradual establishment of new characters through natural selection "The progeny of a fluctuation (i.e., of slight variation as opposed to sudden mutation) will vary," says Walter, "around the old average of the parental generation, while the progeny of a mutation will vary around a new average set by the mutation itself." Weissmann, as we noted above, denies the heritability of acquired bodily characteristics, since their heritage would be assuming the principle that modification is able to modify also the germ plasm. The experiments on mice which he conducted, produced somatic (i.e., body) modifications in the parents, but no tailless descendants were thereby induced. For Weissmann, there are no "acquired characters" save those arising from such modifications as are able to affect the germ plasm itself. He postulates the "continuity of the germ plasm," by which he means that it is forever insulated from the somatic characters, and hence unresponsive to any influence which affects the latter merely. He accounts for variation, or progress, by the theory of "amphimixis," which asserts that one of the prime purposes of sexual reproduction is that the germ elements of two individuals may be commingled, thus making inevitable certain combinations of characters and perchance the production of quite new ones. Natural selection seizes upon any variation thus engendered and either makes possible its continuation or its discontinuance inevitable.

Finally, it should be impressed upon us all that as yet there can be no finality of theory or truth in heredity. The weight of opinion is to day unquestionably toward Weissmannism, to morrow the experiments of scientists may cause the pendulum of conviction to swing back to the Lamarckians, although, as Conklin points out, "even the strongest defenders of the inheritance of acquired characters are constrained to admit that it occurs only sporadically and exceptionally." Only one thing is surely true—the mys-

teries of heredity comprise a great, untrodden field wherein scarcely the surface has as yet been touched. For the student and for the teacher it is necessary to keep an open mind, and to await with interest the results of deeper delving. It may be that many of nature's secrets can never be wrested from her, for she appears to delight to tantalize her explorers in apparently assuring them of one conclusion and in the next moment upsetting all their fine-spun theories by appearing to contradict herself.

In the next chapter we shall dismiss our study of theories and turn our attention to a survey of some of the more interesting and significant studies which have been made in the field of human heredity, paying special attention only to such studies as are of significance to us as teachers of children.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Look up in some standard reference the theories of Lamarck and Weissmann.
- 2 Can you offer any illustrations either of the truth or the untruth of the inheritance of acquired characters?
- 3 Exactly what is meant by an acquired character? By an inborn character? (See reference 1.)

THE LESSON APPLIED

- 1 If the characters which parents acquired during their lifetime could be passed on to their children, might we not be justified in expecting babes to be possessed of complete intelligence at birth, with ability to talk, reason and cogitate like their parents? Is it not rather the case, however, that the intelligence and ability of babes register at zero, and that every individual born into the world must pass laboriously up the pathway of experience and formal education before he can be said to be possessed of rational intelligence, regardless of the mental caliber of his parents?
- 2 If the Lamarckian theory were true, might we not expect the crop of geniuses in each age to surpass that of the preceding until a race of supermen would ultimately and soon result? What would be the corresponding tendency in the crop of abnormals, criminals and non-descripts from age to age? Is not Dame Nature after all wise in pro-

viding for the continuity of the germ plasm in relatively complete isolation from the chance influences of time?

SELECTED REFERENCES

- 1 Conklin, E. G. *Heredity and Environment in the Development of Men*, chap. 4, sec. D
- 2 Jewett, F. G. *The Next Generation*, chap. 11
- 3 Walter, H. E. *Genetics*, chaps. 3-4 and 5

LESSON 25

HEREDITY (*continued*)

4. Studies in Heredity

A promising method of investigation. The direct study of problems in heredity is always promising because the world is full of people who so far diverge in their behavior from that of normal individuals as to offer excellent opportunity for the scientist to investigate the possible factors leading to such abnormality of conduct. Very likely you yourself know of at least one family in which exist such deviations from the normal as epilepsy, or idiocy, or insanity, on the one hand, or the tokens of genius and unusual talent on the other. Students of heredity long since were attracted to the study of persons or families of this nature, with the result that at the present time we possess a considerable number of illuminating inquiries which, while they do not always throw any particularly new light upon the mysteries of heredity, do however serve to demonstrate our previous suppositions in the more obvious aspects of human inheritance to be true. One of the most interesting of these studies of heredity is that made by Goddard, and published under the title of *The Kallikak Family*.

The Kallikak family. Some years ago there appeared at the Vineland Training School in New Jersey, a school for the study and care of the feeble-minded, a girl who especially interested Dr. Goddard and his assistants because of the very obviousness of her subnormality and at the same time her apparent brightness. The fictitious name which the girl bears throughout the records is Deborah Kallikak. Inspired with a curiosity to trace the parentage and ancestry of the girl as far back as possible, the workers at Vineland set on foot an exhaustive investigation into the mystery of Deborah's ancestry. Back through generations

gators were able to trace no less than 480 descendants, of whom 143 were feeble-minded, while only 46 could be discovered to be definitely normal! Among these 480 human beings springing from the line of Martin Kallikak, Jr., who was himself known as "the Old Horror," the following have been diagnosed:

- 36 illegitimates.
- 33 sexually immoral persons, mostly prostitutes.
- 24 confirmed alcoholics.
- 3 epileptics.
- 82 died in infancy.
- 3 criminals.
- 8 kept houses of ill-fame.

These 480 descendants in direct line from Martin Kallikak, Jr., married naturally into other families of about the same type, so that the investigators were able to chart altogether 1146 individuals thus contaminated by the bad blood of the Kallikaks. Of these 1146 individuals 262 have been classed already as positively feeble-minded, with 581 still undetermined!

• And this is a family record!

Let us look now at another side of the same picture. After Martin Kallikak, Sr., left the army at the termination of the Revolutionary War he married a normal girl of good family like his own, and through this union there has descended another line of human beings in every way the reverse of the first line initiated with the alliance made with the feeble-minded girl. Altogether Dr. Goddard was able to tabulate 496 direct descendants of this second union of Martin Kallikak, Sr. And what a different and refreshing picture is presented in this side of the line. Of the entire 496 individuals, not a single person has been found who was not normal in every respect! Three of them were somewhat degenerate sexually or alcoholically, but this is a ratio which could probably be equaled in but few families in which nearly 500 persons were studied. But not only were all

of ancestors the investigation led them, now becoming so obscure and uncertain that they gave up for the time being in despair, now fresh facts coming to light to encourage them in their difficult undertaking. For you must appreciate that delving into genealogy becomes increasingly difficult as the ancestors studied become more and more remote from the present. Sometimes students in heredity labor for months upon a certain line of people, only to find that there are hopeless breaks in the ancestral links which cannot possibly be unearthed, or again to discover that a certain supposed branch of the line upon which one has been working for weeks is after all quite unconnected with the family under consideration. And yet, in spite of all its intricacies and occasional bafflings such investigation cannot but be fascinating. And so Dr. Goddard's workers found it in their efforts to unravel the elusive threads of Deborah Kallikak's parentage and forbears. And "the surprise and horror of it all was that no matter where we traced them, whether in the prosperous rural district, in the city slums to which some had drifted, or to the more remote mountain regions, or whether it was a question of the second or the sixth generation, an appalling amount of defectiveness was everywhere found."

At last, after many months of careful investigations, the ancestry of Deborah was charted, together with the records of several hundred descendants of the original Martin Kallikak, Sr. The following is, briefly, the story of Deborah's ancestry in direct line. Back at the time when the army of the Revolution was being formed, Martin Kallikak, Sr., then a young man under twenty-one years of age, joined one of the numerous military companies being made up in his neighborhood and, at one of the taverns frequented by the soldiers, he met a feeble-minded girl by whom he became the father of a feeble-minded son. The mother gave to this child the full name of its father, Martin Kallikak, Jr., and it was this same Martin, Jr., who became the great-great-grandfather of Deborah. From him the investi-

these persons normal; more than that, "all of the legitimate children of Martin, Sr., married into the best families in their State, the descendants of colonial governors, signers of the Declaration of Independence, soldiers, and even the

THE KALLIKAK FAMILY.

Martin Kallikak, Sr.

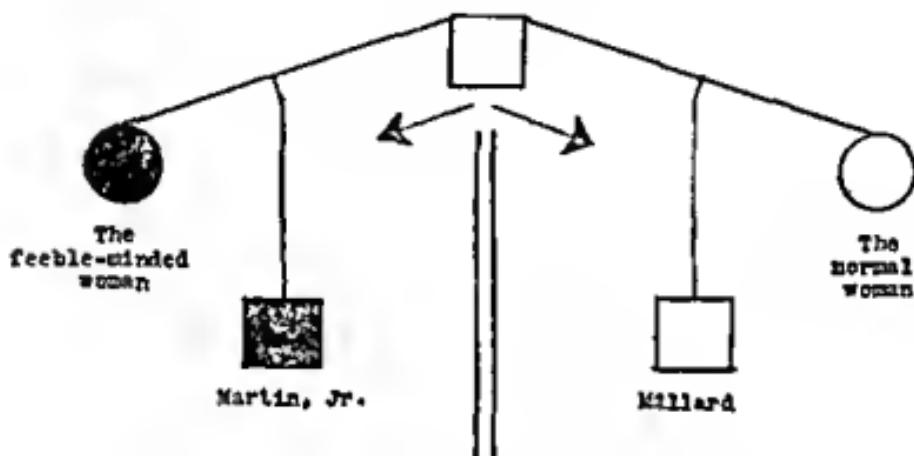


FIG. 6 A FAMILY RECORD

From this line a total of 430 direct descendants were traced. Of them 143 were feeble-minded. Only 46 normals were found.

From this line 496 direct descendants were traced. None were feeble-minded! Many eminent people are included in this branch of the Kallikak family.

founders of a great university. Indeed, in this family and its collateral branches we find nothing but good representative citizenship. There are doctors, lawyers, educators, traders, landholders, in short, respectable citizens, men and women prominent in every phase of social life. They have scattered over the United States and are prominent in their communities wherever they have gone. . . ."

This is another family record!

The conclusions from such an interesting and significant investigation as this are obvious. The study is especially interesting because both lines of descendants issue from the same original father, Martin Kallikak, Sr. By marrying

latter's wife held on a charge of vagrancy. Naturally such an array of crime within the same family excited Dugdale's curiosity, much as Dehorah Kallikak excited the curiosity of the Vineland investigators, and he was urged to make a more thorough inquiry into their family history and herit age.

The investigation revealed the fact that these six individuals belonged to a family reaching back to the earliest colonists. It had lived in the same locality for generations, becoming so despised by the self respecting members of the community that their family name had come to be a by word and a hissing. Of twenty nine male relatives of six persons in the county jail, it was discovered that seventeen were criminals, fifteen of them being convicted and serving sentences aggregating seventy one years. Further inquiry led to the discovery that here was a family most of whose members lived in filth and squalor, and had always done so since time immemorial, and whose highest aims in life appear always to have been to prey in some manner upon the community. All in all it was a family of ne'er do wells, criminals, paupers, thieves, and profligates. Mr Dugdale was able to trace the source of the family back to one Max Jukes, a frontiersman, born slightly before 1740, and living as a hunter, fisher, a hard drinker, jolly and companionable, averse to work, a worthless, useless mortal who had a numerous progeny and nothing to support them with, as is so often true of this type of individual. Through an alliance formed by one of the sons of Max with "Margaret, mother of criminals," together with other marriages or alliances among other equally worthless individuals, several long lines of descent were initiated. From five of these lines, Mr Dugdale registered and tabulated 540 individuals related by blood to the Jukes and 169 by marriage or co-habitation, a total of 709 persons. The investigator reached the conclusion that altogether the total number of individuals of this line reached approximately 1200, of whom he estimates the following characteristics and dispositions:

- 280 paupers.
- 140 criminals and offenders.
- 250 arrests and trials.
- 60 habitual thieves, convicted or unconvicted.
- 7 murderers.
- 50 prostitutes.
- 300 died in infancy or prematurely.

To these are to be added a great number of other categories which we need not pause here to enumerate. Suffice it to say that the investigator concluded from his survey of the Jukes that, up to 1875, the State of New York had been deprived of approximately \$1,308,000 in the care and the prosecution and the maintenance of and the loss of production from these 1200 people. About the only contribution which the Jukes made to the country in return was an "unending contribution of crime, pauperism, disease, viciousness, and immorality," which has left behind it a bitter heritage for coming generations. It is, in other words, the same story of the Kallikaks, except that in the case of Dr. Goddard's family the heredity was feeble-mindedness, whereas in the records of the Jukes feeble-mindedness is a lesser factor than crime and pauperism. It makes little difference what an individual is, whether he be idiot, criminal, or ne'er do-well, blood is certain to reveal it in his progeny.

Thus with another family record!

In the next lesson we shall turn to study a more cheerful side of heredity; i.e., lines of descent in which positive and beneficial tendencies in the ancestral stock resulted in much better citizens than did the descendants of the Kallikaks and the Jukes.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Look through the files of *The Training School*, a monthly bulletin published by the Vineland investigators, paying special attention to the sort of work which is being done in that institution.
2. Familiarize yourself with the work which is being done in your own

State in the way of prevention or treatment of mental defectiveness. What are the agencies and organizations which are at work upon the matter?

SELECTED REFERENCES

- 1 Dugdale, R. L. *The Jukes*
- 2 Goddard, H. H. *The Kallikak Family*

healthy, long lived family. It is not known that any one of them was ever convicted of crime.

What a contrast between this family record and those of the Kallikak, and Jukes lines! In the one case social uplift, good citizenship, eminence, genius, in the other, social degradation, crime, idiocy. And yet in both cases it was the same subtle power of heredity which largely predetermined the characteristic traits in the former cases, this force was beneficent, in the latter, malignant.

Galton's Hereditary Genius Many years before Dr Winship published the records of the Edwards-Tuttle family, Sir Francis Galton, whom you recall as the originator of the two laws of *ancestral inheritance* and *filial regression* outlined in Lesson 23, published a very interesting volume, entitled *Hereditary Genius, An Inquiry into its Laws and Consequences*. The book was the result of a very exhaustive and painstaking study of a large number of eminent statesmen, scientists, literary men, artists, musicians, etc., together with many of their relatives, with the purpose of discovering whether or not such eminent persons numbered among their relatives and ancestry more persons of eminence than would be found to be true of the families and ancestors of average men. Galton's method deserves a word of explanation, since it involved the application of a theory or principle which is in itself interesting.

The method which Galton employed was, briefly stated, as follows. By dint of an examination of several biographical handbooks of his time, of the obituary notices published in the *Times* for a single year, and of other records of prominent men and women, he reached as a working basis the test of an eminent man as "one who has achieved a position that is attained by only 250 persons in a million of men, or by one person in each 4000," although the mass of those with whom I deal are far more rigidly selected — many are as one in a million, and not a few are as one in many millions. I use the term 'illustrious' when speaking of these."

With the aid of this standard of "one in 1000" Galton proceeded to "measure" the relatives and ancestors of some of the greatest personages the world has ever produced. In this section we can only refer to a very few of the thousands of individuals included in the survey.

In the case of great generals, Galton found that Alexander the Great was himself the son of an illustrious father, Philip II of Macedon, and an exceptional mother. Olympias, Ptolemy Soter I, King of Egypt, was Alexander's half-brother. Besides these illustrious relatives, Alexander's half-nephew, Ptolemy Philadelphus, his cousin, Pyrrhus, King of Epirus, and a son, Ptolemy II Nerges, were all famed men of varying degree. Napoleon, too, numbered among his relatives a mother, sister, brother, son, and two nephews whose eminence is unquestioned. Julius Caesar's illustrious relatives included his mother, Aurelia, his daughter, Julia, his niece, Atia, who became the mother of Augustus, his great nephew, Augustus Caesar, his uncle, the Consul of Rome, and Mark Antony, who was also related to him. Hannibal's relatives well known in history were Hamilcar Barca, his father, Hasdrubal his brother, Mago another brother, and another half brother who was a general in Spain. So in the case of P. Cornelius Scipio, conqueror of Hannibal — a father, grandfather, son, daughter, and two grandsons were all people of fame in their time.

Of literary men Galton demonstrated to his own satisfaction that the ancestral lines numbered other individuals of repute in a great number of instances. For example, the case of Charles Lamb and his sister is cited, as is also that of Macaulay, with his grandfather, father, uncle, cousin and nephew, all of whom were illustrious statesmen or writers. Dean Swift, the satirist, was a first cousin of Dryden the poet and also of Deane Swift his biographer. Theophilus Swift, a second cousin, was a political writer of much prominence. Sir Philip Sydney was the son of a prominent father and grandfather. He also numbered among his relatives a famed uncle, cousin, and a sister, Mary, to whom he dedi-

cated his *Arcadia*. A nephew of his also was a Chancellor of Oxford.

Among men of science Galton cites the line of Aristotle, whose father, grandson, and second cousin, Callisthenes, were known to fame. Francis Bacon, "the wisest, brightest, meanest of mankind," was the son of a Lord Chancellor of England, and of a mother widely known as a scholar. Other members of this family who attained prominence included a grandson, cousin, brother, two half-brothers, and a nephew whose names ranked high among the intellectuals of their day. Charles Darwin, the biologist, belonged to a family in which at least four others were noted naturalists.

Samuel T. Coleridge, among the poets, was the father of two illustrious sons and a daughter, and had three nephews, a grandson, and a cousin who became likewise famous. Wordsworth, too, numbered among his eminent relatives a brother, who was Master of Trinity College, and three nephews, one of whom was Headmaster of Harrow while the other two were known as excellent scholars.

One of the most interesting divisions is that of the musicians, and one of the most interesting families among them is that of Bach. Fifty-seven members of that family found places in the biographical collections of musicians. The father of Sebastian Bach was a distinguished organist. Bach's first cousin, J. Christopher, was one of the greatest musicians of Germany. His son, Guillaume Frederick, "Bach of Halle," was a man of great power and learning; Emmanuel, another son, called "Bach of Berlin," was the founder of pianoforte music. Another son, Christopher, called "Bach of England," was a very charming composer. Mendelssohn's grandfather was a celebrated Jewish philosopher; his father was a rich banker of Berlin. The great musician had a sister who was said to be Mendelssohn's equal at the piano, and possessed of high genius. In the family of Mozart, the father of the great composer was a famous violinist and composer. A sister of the first was likewise a talented musician. Mozart had two sons,

Charles and Wolfgang, both of whom were accomplished players and composers.

A great deal has been written about this investigation by Galton, and some of the criticisms which have been made of it are not without good basis. For example, many of the greatest musicians, such for example as Wagner, Schubert, and Handel, are not included in Galton's list of musicians. The same is true of his lists of authors, scientists, poets, *et al.* It has been objected, too, that many of the persons whom he does include in his records were neither geniuses nor near geniuses, but were rather cited by Galton in order to make out his case. In spite of these substantial criticisms, however, Galton demonstrated conclusively that talent in a very great number of families finds expression in more than one member of such families. Of the exceptions to this rule he admitted that he did not take account. His own conclusions are "that eminently gifted men are raised above mediocrity as much as idiots are depressed below it"; that "few people win high merit without possessing peculiar gifts"; that "if a man is gifted with vast intellectual ability, eagerness to work, and power of working, such a man cannot be repressed"; and that "we must not permit ourselves to consider each human or other personality as something supernaturally added to the stock of nature, but rather as a segregation of what already existed, under a new shape, and as a regular consequence of previous conditions. . . . We may look upon each individual as something not wholly detached from its parent source,—as a wave that has been lifted and shaped by normal conditions in an unknown, ilimitable ocean."

Heredity in Royalty. In 1906 Dr. Frederick A. Woods published another study in heredity, entitled *Mental and Moral Heredity in Royalty*. The personages investigated were the members of the royal families of the chief countries in Europe, and the method employed was similar to that used by Galton in his study of hereditary genius, discussed above. On the basis of the law of deviation from the average,

Dr Woods graded all the 832 characters studied on a scale of 10, according to both their intellect and their morals. Obviously, from the very nature of the law, the greatest number of all should be found to occupy an average position on the scale around 4 to 6. Below 4 would be a decreasing number down to 1, the idiots and incompetents; while above 6 would be a correspondingly decreasing number of the unusually bright and the geniuses up to 10. As a guide in his classification he depended as did Galton, on the leading biographical dictionaries of the time and upon the stamp which history has given to the rulers and their families.

By starting with the present King of England [at that time Edward VII] and including all his ancestors to four generations and then all the other descendants from these ancestors and stretching out in every direction by this endless-chain method I have at present obtained mental and moral descriptions of over 600 inter related individuals including pretty completely the following countries of Europe England (House of Hanover) Germany France the Netherlands Spain Portugal Austria Italy, Russia Denmark and Sweden. The period covered extends in general back to about the sixteenth century, but in the case of Spain and Portugal to the eleventh century.

All the above families are related through some connecting link.

In general, without entering in detail into the results of Dr Woods's interesting and laborious work, it may be said that his conclusions are much like those of Galton. He finds, for instance, that there is a distinct correlation between intellectual abilities and moral qualities in royalty, that neither luxury nor consanguineous marriages nor exalted position have proven unfavorable to the inheritance of ability that "heredity explains all (or at least 90 per cent) of the intellectual side of character in practically every instance", and that "even in the moral side of character, inherited tendencies outweigh the effects of surroundings". Wherever degeneration in royal lines has occurred, Woods

finds that such degeneration is to be explained on the grounds of pollution of the blood through marriage with a family in which a degeneration was then existing. However, degeneracy in royalty appears to be not nearly so evident as popular belief might lead us to think. In the 832 persons studied there were found no less than 25 world geniuses "who stand without superiors in the practical domains of war and government," a ratio which it would be hard to duplicate in any other department or condition of society. "The royal breed is superior to any other one family, be it that of noble or commoner." Finally, "the upshot of it all is that, as regards intellectual life, environment is a totally inadequate explanation."

It would appear, then, from these two classic inquiries into the nature of human heredity that heredity is a prime influence in shaping and moulding the possibilities of life. Environment remains a tremendous factor, as we shall see, in the evolution of every human being but the driving force appears to be installed by heredity. In the next lesson we shall endeavor to draw some conclusions from our survey of heredity which will be of significance to our work as educators and trainers of the child.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Study the principle of deviation from the average as outlined in Galton's *Heredity Genius*
- 2 Report upon the House of Hanover as tabulated by Woods in his *Heredity in Royalty*

SELECTED REFERENCES

- 1 Galton Fr. *Heredity Genius*
- 2 Winslow A E. *Jukes-Edwards A Study of Education and Heredity*
- 3 Woods F A. *Mental and Moral Heredity in Royalty*

LESSON 27

HEREDITY (*continued*)

6 The Heritage of the Children

What to look for in the observation period

- 1 Evidences of mental or intellectual differences between the pupils such for example as differences in interestedness powers of concentration command of language and expression keenness of perception type of memory imaginativeness reasoning ability ease and faithfulness of association etc
- 2 Evidences of social differences between the pupils (i e differences in politeness good behavior conscientiousness social adaptability on the playground qualities of leadership capacities of mixing well seclusiveness etc)
- 3 Evidences of scholastic differences differences of ability in specific studies such as arithmetic history language work drawing etc Does the pupil who is bright in one study appear to be bright in most or all the other subjects?

Some practical conclusions We have now completed our brief survey of the field of heredity and turn in this lesson to an application of the facts and principles discussed in the preceding five lessons to our work as students of childhood and as teachers It should be reiterated at the outset that our knowledge of the principles underlying human heritage is at best scant and fragmentary and that any conclusions which may be suggested by our present knowledge are subject to revision as experimentation advances along this fascinating line It is probable however, that the records of our racial and ancestral past are now sufficiently complete to warrant making the following summary

Racial heredity Nature never makes any mistakes in her breeding Of this fact we may be assured Whatever may appear upon the surface to be an abortion and an absurdity of nature will be found ultimately to be the result

of a very definite and doubtless a very wise natural law. In the wider aspect of racial heredity, one can catch something of nature's inexorable constancy in the faithfulness with which she fashions her children true to race and type and stature. For example, the child of the negro blood is unerringly black; the child of the white parent is unerringly white. In a similar way the children of all colors of skin continue and perpetuate the color of their racial forbears. Likewise with respect to physical characteristics which are fundamental. The height of human beings, we may believe, has remained tolerably constant for thousands of generations, as have also their approximate weight and girth. Any chance or unusual variation in the physical averages of human beings has in the past always tended in the next or subsequent generations to approach the mean, in accordance with the expectations of Galton's law of filial regression.

Physical aspects of heredity. Accordingly children should prove in the great mass of cases to be more like their parents in physical characteristics than less. Children of parents below the average height or weight should tend to be of lesser height and weight than they, but at the same time should be found to approach somewhat the type, or average. Occasionally, however, our calculations appear to be utterly upset. Now and again the son or daughter of parents of mediocre height will shoot up nearly a foot taller, while on the other hand those of parents of unusual height will be found less tall than the average. For such exceptions as these the science of heredity can offer as yet no thoroughly dependable explanation. Often, it is true, a child "takes after" his mother and not his father in the matter of height or features or complexion, etc.; often he "takes after" the latter rather than the former. Often, too, the child appears to be not at all like either father or mother in any physical characteristic. In such case there are at least two possible sources of his variance with the parents. In the first case, he may have inherited a

"blended" character; i.e., one in which the characteristics of both mother and father appear to be commingled in him. In the second case, he may draw 100 per cent of his characteristics from neither mother nor father, nor from both together, but rather from some other ancestor, for example a grandfather or a grandmother, or perhaps an uncle or aunt, or some other member of the ancestral line.

Thus uncertain and baffling are the problems of heredity. Thus, too, you can understand how hopeless a task an experimenter or inquirer into the nature of heredity faces when he attempts to formulate mathematical computations and probabilities in this most elusive and apparently contradictory field. You recall from Lesson 23 that Galton ascribed a certain definite and constant amount of weight to the influence of the immediate parents, grandparents, *et al.*, in the formation of the natures of a child. You see now, however, that while Galton's law of ancestral inheritance may hold true, and apparently does, for the greatest number of cases, it does not explain the striking variations from type which one continually meets. One needs to remember always in his contemplation of the problems of heredity that every child has a countless host of ancestors, after any one of whom, theoretically, he may take any of his physical characteristics. As a matter of fact, however, it is probably rare that a child resembles to any great degree any one of his ancestors more removed than three or four generations.

Mental inheritance. In general, what we have said concerning the inheritance of physical characteristics applies equally well to the heritability of mental and moral characteristics. It is obvious, however, that the environment into which the child is born is of far more profound influence upon these characteristics than it is upon the purely physical characteristics, which are inborn absolutely, and which develop relatively independent of varying influences of environment. In general, then, you may expect the children whom you teach to be on the whole more like their parents than unlike them; but you may expect also that a consid-

nppear. The general rule, however, will hold; viz : that children of the same family are more like than they are unlike. Thorndike found, for instance, upon measuring fifty pairs of twins in the New York City schools, that the resemblance between them was greater than between other children not so related. And yet it is quite possible, and often actually so happens, that one of the twins may draw 50 per cent or more of his character from one parent, while the other of the two draws similarly from the other. Or, again, the one might be possessed of a blended inheritance, while the other was not, or the two might draw any percentage of their respective characters from different ancestors further back than their immediate parentage.

The inevitableness of heredity. Enough has been said in the last few lessons to demonstrate the inevitableness of heredity. It matters not whether the ancestral line be one like that of Max Jukes, or Martin Kallikak, or whether, on the other hand, it be one like that of Napoleon, or Bach, or Haydn, its perpetuation in offspring of like characteristics is absolute. This simply means, applied to the average children with whom you will be thrown in contact in your everyday teaching, that children and parents are chips off the same ancestral block, whether that block be rotten or sound. This being true, the first limit which is set to your beneficent work as teachers is that set by the ancestry of those whom you would teach. It is impossible for the teacher to create capacities which are foreign to the hereditary stock of any child. She may labor incessantly and exhaust all the fine arts of her teaching methods; at best she can only provide a favorable setting in which the traits handed on from other generations may find favorable opportunity for unfolding in the present. Beyond this she is not able to go. The famous contention of Jefferson that all men are created free and equal should, in the light of heredity, read, "all children are born bound and unequal," for surely original nature varies in all of us.

This suggests the need of a larger amount of individual

work and attention devoted to all children in school. If every child differs inherently from every other child, it is the duty and responsibility of the school system to discover very early in the school life of the child any peculiar and promising traits which he may possess, or any marked limitations in capacity in order that the school environment may be so manipulated as to be made of the greatest possible advantage to him. At the present time, as you are aware, there are a great number of children to be found in almost all school systems who are distinctly below the average in mental endowment, and whose presence within any given grade operates to retard the progress of the whole group of children of average ability, to say nothing of the effect upon the progress of those few in the upper third of the grade whose abilities are marked. To such children the average teacher is compelled to devote an amount of time out of all proportion to their number and merits, or else she is forced to the opposite extreme and tends to neglect such children of meager equipment, in spite of the fact that actually those are the very pupils who stand most in need of every possible effort in their behalf.

Deviation from the normal. We have already referred to this principle of deviation from the normal, or average. In any group of adult human beings, for example, it will be found upon investigation that the great mass approximate a certain fairly uniform height, which we may call the average. But on the one extreme from the average will be a small percentage of the total number whose height deviates by several inches from the average, while on the opposite extreme will be found a relatively similar percentage whose deviation from the average is likewise several inches, but in the opposite direction. That is, for example, the average height of the mass of men may be five feet and eight inches; but there will be a few who are not more than five feet tall, with intermediate heights all the way up to the medium. There will also be a few who measure perhaps six feet and two or three or more inches, with intermediate heights again

all the way downward to the medium. This same principle holds true of mental capacities and abilities. The great mass of children in a given grade will perhaps rank around 90 per cent; at the same time there will be variants from this average down to 70 per cent, or 50 per cent, and perhaps much lower. A few children will rank at 100 per cent, or at 98 per cent, or 95 per cent, and will constitute distinctly a grade of intelligence well above the average. Of course it must be borne in mind that there are many children who are kept back from attaining their own maximum rate of progress from purely extraneous reasons, such as illness, or inability to use and understand readily the English language, or from related causes, and we must be careful to make allowances for all such possible circumstances in judging the innate abilities of children.

We might extend our application of this law of deviation from the average to every subject of study. Some children, for instance, will be very awkward in arithmetic, while others will be unusually capable — the mass will fall midway between both extremes. So with most other studies, and not infrequently the same child who ranks as "excellent" in literature may rank as "poor" in mathematics, although such specializations of abilities in the common subjects of the elementary school are probably less often met with than might be supposed. Back of all these variations and discrepancies of abilities in school children, more potent than environment, stand the inexorable laws of heredity. You can no more set them aside than you can set aside any of nature's laws: they can be mitigated to a limited extent, but never effaced or altered.

We have now looked sufficiently into the nature of heredity and its laws to be able to appreciate that there is no sharp line of demarcation which divides all children into distinct classes labeled "normal" and "abnormal," respectively. Rather the intricate possibilities of the germ plasm are such that one level of intelligence shades off almost imperceptibly into a lower level, on the one hand and, on the

other, into a higher one, until by slow gradation the two opposite poles of mental endowment are reached. The lower of these is intellectual zero, the higher represents genius. Without exception, the place occupied by any individual upon this scale depends upon his heritage or non-heritage of talent. We shall return to this subject in Lessons 41 and 42, when we shall inquire more specifically into the characteristics of dull and of brighter children.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Is it according to your observation that children resemble on the whole their parents? Do you know of any marked exceptions to this rule?
2. Compute mathematically the number of direct ancestors you have had since 1620, allowing thirty years to each generation.
3. Do you know of any cases in which normal parents have markedly subnormal children? Can you explain such apparent inversions of natural law?
4. Do you know of any children who possess conspicuous talent in any line? Is there any immediate explanation of this in their parentage so far as you know it?
5. Study the origin of the normal probability curve. (Reference 3.)

SUGGESTED REFERENCES

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2. Newell, N., and Whister, M. T. *Psychology of Childhood*, chap. 1.
3. Walter, H. E. *Genetics*, chap. 12.
4. Popper, P., and Johnson, R. H. *Applied Eugenics*, chap. 3.

LESSON 28

TRANSITION TO LEARNED BEHAVIOR — ENVIRONMENT

What to look for in the observation period

- 1 Evidences of the persistence in the children of bad habits of speech. Can you tell roughly the class of home from which many a boy and girl comes by their speech habits?
- 2 If possible observe a lesson in reading in the seventh or eighth grades, and determine whether the story that is being studied is of a type that should naturally make an appeal to the interests of boys and girls of thirteen or fourteen years of age.
- 3 Are there any appointments or factors in the general environment of the school which you think might have an unsatisfactory influence upon the pupils? What are some especially fortunate moulding influences in the surroundings?

Heredity versus environment In the preceding lessons in heredity it may have appeared that environmental factors seem to play only a slight part in the evolution of the child. It is necessary now, however, to turn to a more complete statement concerning environment, which after all is a highly important and significant factor in the development of every one of us. Within the meaning of the term environment are included all those forces in the external surroundings of the child which influence in any way his mental or physical or moral growth. Now if you will pause to consider the matter for a moment you will be compelled to conclude that there are very few things indeed in the world of the child which do not in some way have a bearing upon him. His home, school, playmates, church, all modify in some way his original nature and exert a pronounced influence over his behavior. Of two boys, for example, possessed of similar original endowments, the environmental forces of the one may exert such a profound

influence upon him as to cause him to develop into an altogether different individual from the other. The accompanying diagram (Fig. 7) illustrates what has appropriately been called the triangle of life. You will note that,

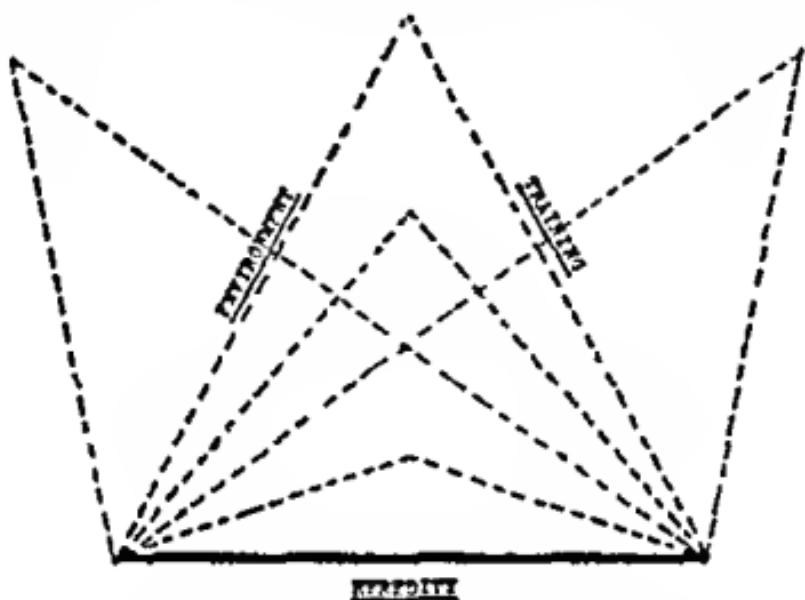


FIG. 7. THE TRIANGLE OF LIFE:

Indicating how training and environment may operate to produce from the same hereditary stocks (or equivalent hereditary stocks) individuals strikingly different from one another. (Reproduced by special permission of the Princeton University Press from Coaklin's *Heredity and Environment in the making of Men*.)

given an identical base (heredity) two or more individuals may unfold into widely dissimilar personalities because of the varying pressures exerted by the two side lines (training and environment). Thus, while we said in the last lesson that heredity sets the first limit of an individual, it is evident that environmental agencies may operate to evolve from like original natures unlike individuals within the same limitations. There is, however, much evidence to show that like qualities in original nature persist markedly regardless of differences in environment, and that unlike qualities persist regardless of sameness in environment.

The question has often been asked, which is relatively the more important factor in human development, heredity

or environment? This is a matter about which we need concern ourselves little. As well attempt to answer the question, which is the more indispensable element, water or air? Both heredity and environment are important agencies in the building up of an individual, and it is inconceivable that such an idle question should occupy the minds of teachers who are in search of dependable information. Possibly the only satisfactory answer to the question is to be found in the careful words of Sir Roger de Coverley: "Much might be said on either side."

Some important factors in environment. Let us examine some of the more obviously significant forces in the environment of the child which our own observation and experience inform us to be inevitable in their influence over young people generally. In the home, undoubtedly one of the most tremendous forces exerted over the child is the language which is used habitually. You will not be a teacher very long before you will make the discovery for yourself that the language used by your children is the language of their respective homes and it is likely that you will struggle valiantly and sometimes in a seemingly losing fight to encourage your boys and girls to form the habit of making the appropriate substitutes for the omnipresent "ain'ts" and "hain'ts" and "ain't guts," and "hain't guts," and a score of other speech barbarisms which sully the spoken word. Children coming from more or less careful homes where a reasonable standard of pure speech is the rule will inevitably use choicer language than those coming from homes where a mixture of purities and impurities of speech is the standard. Then, too, on the part of the home environment, the manners and habits of politeness and courtesy and obedience and the attitudes of mind and the tastes in dress and the attention to simple rules of hygiene are all of extreme significance in the development of the children. You will find in the same schoolroom the most glaring contradictions and inconsistencies in these several respects, and will at times be quite at a loss to secure the im-

provements which you desire in all cases. Obviously heredity plays a not inconspicuous part here, in that as a rule those children whose parents are the neatest or the most careful in their speech, etc., may be assumed to belong to better ancestral stock than do those children among whose parents the reverse is true. There are, however, exceptions to this, as to most other rules.

We have already discussed the gang instinct, and have seen that the influence exerted by one's "set" or group is of much significance. The child may come from ever so good a family, but, if he belongs to a bad group, the innate and instilled habits and attitudes and ideals are likely to suffer grievously. How many a life which has started with all the promise and glamour of happy, normal youth has ended disastrously in young manhood, and all because the influences into which it drifted were unfortunate! Outside of heredity alone there is probably no other force exerted upon boys and girls which equals that exerted by the company in which they move. Many parents in these days, when the call of the street is so insistent and enticing, are striving successfully to combat the influences of the street and of the questionable group by fitting up for their boys an attic chamber, or some room in the house which they can call their own, and where they can store all their choicest treasures, and where, too, they may receive and entertain all their boyish friends. There is no question as to the positive value of such a wise provision as this. Happy the boy who possesses such a *sanculum sanctorum* wherein he is monarch of all he surveys, and wherein he may do and play whatsoever he will, within the proper limits. There is probably no happier nor more attractive place than the boy's den in the whole realm of childhood.

The environment of the school, except in so far as the influence of the gang extends within it, makes up what we called the training side of the triangle of life, and as such we are not properly concerned with it in a book of this sort, which deals rather with *childhood* than with organized

methods of teaching childhood. There are two other forces in the environment of children which deserve special consideration at this point. These are the reading matter of boys and girls, and the amusements in which they indulge.

The reading matter of children. If you try to recall the interests of your own childhood you will undoubtedly find that one of the stronger forces which exerted a moulding influence over you was the reading which you did outside of actual studying. Probably you still recall one or two favorite stories, like *Little Women*, or *Little Men*, or some other tale which held you in fascination for hours as you followed the magical unfolding of it from the first page to the last. And it may be that after it was finished you regretted having read it so fast! Possibly, too, you have since reread the same favorite stories of childhood and have found in them ever-recurring pleasures which you did not before experience. Such is the spell created about one by a thoroughly enjoyable story!

It is but a step after all from your own childish interests to those of your children. The same wonderland of saga and romance through which you journeyed happily spreads before your own children, and they experience the same delights along the wayside as did you. What need for careful supervision is there in all this matter of reading! Not a day passes in which new books of the lighter sort do not appear fresh from the press. Some of them are good, some are bad; some are indifferent. Every child who enters the stage of late childhood is heir to a heritage in literature greater than that enjoyed by any child preceding. And yet how few children ever are really introduced to their heritage! Many a poor, famishing heart, heating fast in the breast of boy or girl, feeds upon the husks of literature. And many a broken man or woman looks back upon his or her early reading matter and denounces it as having been the strongest agency in their undoing.

But even though human life be not broken by trashy

reading, it is yet often limited and hedged in from a wider, freer universe by the sordid and the impossible and the absurd in what flourishes under the name of "literature." Often a young adolescent finds his views of life and his sense of values hopelessly distorted and overturned by the books which he devours. A new heaven and a new earth surround him, but the heaven is murky and the earth is unreal. Contrast with this adolescent the one who has been led by wise guides of childish steps and interests to enjoy the best things in literature, in so far as they are within his powers of comprehension and his range of interests. In the past we have had few school libraries, but they are coming to be a modern necessity to the end that there may be always before and available to one the best that the magic world of fancy has to offer children in every age. And there are an infinite multitude of such tales, graded according to the age and intelligence and interests of children. With them every teacher should be tolerably familiar, and no teacher has any right to stand in a schoolroom as a master workman who cannot pick out or recommend to any boy or any girl of any age a story book which will exactly suit the individual case. If you feel that you are not able to do this, by all means leave off reading the latest popular fiction until you have familiarized yourself to a degree at least with the available things in juvenile literature.

A word should be said, too, regarding children's magazines and periodicals. If a wise relative ever subscribed for you to one of the many available publications of this sort you can still recall the eagerness with which you looked forward to the regular weekly or monthly appearance of the magazine in order to discover what was recommended to be built or played, or to turn eagerly to the "continued story" which left off last month at the most interesting point, and to peruse it to its happy outcome. Many a day was made happier and many an evening more enjoyable by absorbing one's self in the pages of such magazines as these. Do you think you could advise a parent who might ask you what

are some of the periodicals which would be interesting to a boy of twelve, or to a girl of nine?

The conclusion of the whole matter is this: most children love to read; reading is a sort of pastime which transports one beyond the here and the now and extends his little horizon of home until it embraces the uttermost parts of the earth. Other lands and other scenes, other peoples and other children, other ways of living and of playing, heroes and heroines of the past, visions into the future, adventure and romance — all these exist in the printed page, ready to step forth at the word of command from the youthful magician. Coexistent with all these, however, are large numbers of books which instead of extending the horizon of the adolescent outward across the broad, open universe, delve rather down into the abysses and maelstroms and underworlds and vortices of life, dragging with them the light, airy souls of boys and girls which were meant rather to soar aloft than to be contaminated with the pollution of social dregs.

Amusements. Everybody must relax. After periods of storm and stress in work there must inevitably succeed periods of recuperation in which the organism seeks release and relief. Undoubtedly the healthiest form of relaxation is that which finds its outlet in physical expression of some sort, or at least in mental rivalry such as in games and sports. We have not the space here to enter into a discussion of the various kinds of amusements in which children seek their relief from work, but one form there is which cannot be lightly set aside as an environmental force for good or for bad upon every child participating. I refer to the general motion-picture theater. From the very nature of human life and relationships of the present day it is inevitable that amusement should be sought in theaters, either orthodox play theaters or motion-picture theaters. It has been estimated that *once in four weeks every man, woman, and child, on the average, in the United States attends the moving-picture theater, not to mention the number in the mean-*

time attending the orthodox theater. Here is, apparently, a form of amusement which is attractive and compelling. Watch, if you will, the young child, boy or girl, who chances to have a bright nickel and a stipulated amount of time on his hands and you will see him hovering about the lurid posters outside the cheaper theaters in an endeavor to decide which of the possible theaters offers the most for his mooley! Finally, having made his decision, in he goes and becomes at once one of a great number of other children and adults whose eyes are fixed upon the wondrous presentations on the screen, and from whose minds the whole outer world is for the time being quite shut out. Everything is oblivion save the animated scenes before one.

Now there is in all this a danger. The mind of the child is very impressionistic, easily influenced toward the good or the bad. The new and strange things which he sees depicted upon the screen excite his imagination and furnish him food for thought long afterward. Of course if all motion-picture films offered were intended primarily for children it would be a relatively easy matter to so regulate them as to make them at least harmless. The moving-picture theater is, however, an institution intended primarily for adults, and for that very reason offers many moral dangers to the children who are always to be found there. The average adult theatrical taste has been so long outraged that unusually passionate depths of emotional or suggestive themes must be touched in order that a picture may be creditably received. The influence of such films upon the suggestible and omnivorous minds of the children cannot but be destructive. Adult relationships and "problem plays," and improper situations thrown objectively before the fascinated gaze and eager mind of the child upon the screen make at best poor sustenance for the unfolding mental and moral life of a child. "This portrayal of vice, of depravity, of drunkenness, of murder, of brigandage, this premature expose of adult passions, adult lust, adult vengeance; this wresting the lid off the dregs of society, this

unveiling, as it were, of the tree of life, can but be too suggestive of emulation and imitation to boys and girls the very earmarks of whose souls is the zeal to imitate and emulate." And yet it should be remembered that in the moving picture properly censored and edited, society has a tremendous ally in the training as well as the amusing of its children.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Collect and bring to class for discussion as many illustrations as possible to show the influence of the home environment upon the speech, or manners, or habits, etc., of children.
- 2 Do you chance to know of any boys whose parents have provided "dens" for their exclusive enjoyment? What has been the effect of this provision upon them, so far as you are able to determine?
- 3 Observe if possible and report the type of story which you find any child to be reading. Can you determine how he reacts to the story?
- 4 What experiences have you had which would tend to show the interest which children have in moving pictures? The effects of patronizing such forms of entertainment upon them?

THE LESSON APPLIED

- 1 President Eliot made the statement many years ago that the readers ordinarily in use in the schools are highly unsatisfactory. Can you think of any explanation of such an opinion, if true? Has it been your own personal experience in coming up through the schools that the natural craving of children for reading material has been satisfactorily ministered to by the school reader?
- 2 What is your reaction to the following condition of affairs, which is by no means an unusual one in many of the smaller schools of our country?

In a certain country school there were recently four children who were deemed by the teacher to be sufficiently advanced in "reading" to comprise the "first class." Consequently, at the beginning of the school year the four were put into the "eighth reader." The book comprised some thirty selections of prose and verse. The class "read" five times a week. At the end of some six weeks the book was completed. What then? For the remaining thirty or more weeks of the year the identical book was read and re-read, until the four must have known by heart every selection it contained — and hated them as cordially!

- 3 Would it be possible, following out Dr. Eliot's suggestion, to introduce into the schoolroom "real literature," carefully adapted to the age

LESSON 29

HABIT

What to look for in the observation period

- 1 Any evidences that some children are more plastic i.e. more readily responsive to school influences than are other children
- 2 Illustrations of the physical plasticity of children as illustrated in round-shoulderedness, unsymmetrical development, bow legs, or other postural defects

Learned versus unlearned behavior We have now completed our survey of the field of unlearned behavior and turn our attention from *nature* to *nurture*, from the inborn potentialities of the organism to the acquired powers and attitudes which come about as the result of experience. We have seen that the lowest form of unlearned behavior possible to living organisms is the tropism that the next higher forms are the automatic and reflexed acts which regulate more or less our physical life and finally, that the highest form of unlearned behavior is the instinctive activity which we have discussed under some dozen or more heads. Having enumerated and discussed some of the more important instincts we paused for a few lessons to inquire into the nature of heredity which is likewise an inborn force. Taken together, all these automatic and reflex and instinctive forms of behavior, plus all the contributions made to an organism by heredity, comprise what we have called the *original nature of man or unlearned behavior*.

Suppose however, that the child of original nature should remain throughout his life unmodified by the moulding and shaping and directing forces of environment and training, suppose no infant were able to perfect or control or transform or sublimate his instincts suppose the compulsions of an unfortunate heredity could not be in a measure miti-

bread making that the mass of dough yields to pressure exerted upon any part of it, and that it is quite easy to make from the same mass either biscuits or buns or rolls, or perhaps cakes, pies, or doughnuts, depending not at all so far as form or shape is concerned upon the ingredients, but rather upon the nature of the pressure exerted from the outside upon the mass. In a sense it is this same *modifiability* of the organism of the child which makes training and growth possible. We have in a previous lesson referred to the neurone as the unit of the nervous system, we are now to add to our knowledge concerning neurones that they are capable of profound modification as a resultant of the external stimuli which are exerted upon them. Some of them are far more responsive to these environmental agencies than are others. You learned, for example, that those nerve centers controlling the vital functions of the organism, like breathing, the circulation, digestive processes, and the purely functional responses, are very little subject to modification. The appropriate nervous connections are born, and no amount of effort can succeed in varying them to any appreciable degree. But of the nerve centers and nerve pathways which are concerned with all the higher forms of behavior, that is, with such behavior as is initiated by experience and training, the same thing may not be said. Here there are very wide ranges of variability and modifiability dependent wholly upon the nature of the stimuli which pour in from the outside. It is this range of variability which makes habit possible, it is also this same range of variability which we have termed plasticity.

Plasticity of animal organisms lower than man. It may be given as a general truth that the lower is the scale the organism the less its range of variability, or plasticity. It follows as a corollary from this that man's organism is the most plastic of all animal organisms, since man represents the highest complexity of living creatures. Let us first, however, note the relatively slight plasticity in the lower animals. In the case of the insects, for example, there is

ease with which the bony structures of the body are modified into varying shapes. We have referred in a previous lesson to the well-known custom among Chinese mothers of the near past of binding the feet of their infants in order that in adult womanhood they might have tiny, unobtrusive feet. The plasticity of the bones in infancy is such that the normal growth impulse may easily be thus modified, and the Chinese mothers were well aware of the necessity of applying the bandages in earliest infancy in order to take fullest advantage of nature's plasticity.

Another interesting evidence of the greater plasticity of children is to be found in the readiness with which such skills as foreign language pronunciation, piano-playing, violin-playing, writing, etc., are acquired in childhood as contrasted with the relative difficulty of acquiring them in later life. It has been within your observation doubtless that the tendency now is to introduce the study of foreign languages, such as French or Spanish or German, much earlier in the school course than was the practice formerly. The reason for this is, obviously, that because of the greater flexibility of the vocal organs unaccustomed sounds found in the pronunciation of a foreign language can be far more satisfactorily produced in early life than would be true if one attempted to master them at twenty. Not infrequently it happens in the case of older students that the reproduction of unusual sounds, as for instance the French *u*, can never be acquired satisfactorily. So with the learning to play a musical instrument; the time for practice is in childhood, when the fingers and hands are still plastic and capable of being trained. Fancy if you can a man thirty years of age, who had never learned to play, beginning to take lessons on the violin! In writing, too, the illiterate adult who has come up through his early years without having learned this art will find himself confronted with a difficult task when he sits down at forty to learn to write his name! The same thing is true of the woman who sets out to learn the latest dancing steps, although she has never before

if one source fails, the race of men does not become extinct; for immediately, owing to his plasticity, man is able to change completely his manner of living. Do you remember Mr. Micawber, the inimitable optimist in *David Copperfield*, who was "always ready for anything which might turn up," and incidentally always expecting and waiting for something to turn up? Mr. Micawber illustrates pretty well the value to the human being of this inherent plasticity which can adjust itself to anything that may chance to "turn up."

Plasticity and childhood. We have already made the statement that it is in childhood that the possibilities of adjustment to circumstances are at their height, so far as the physical capacities are concerned. It should also be said that the whole nervous system of the child is in a far less fixed and static condition than is the case with the adult nervous system. The neurons possess almost limitless possibilities of connection at this time in life, and hence the mental side of life in childhood is likewise plastic. It is this modifiability or plasticity of the nervous system that lies at the basis of habit formation. Just as the physical body of the child was seen to be capable of a great variety of adjustments to the forces of the environment, so the mental and moral life will be seen to be likewise rather easily modifiable. In other words, childhood is the time of life in which *habits* are formed that will continue more or less constant and unvarying throughout the whole future life of the individual. In our next lesson we shall discuss the nature of this important force in all of us.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Cite as many instances as possible of the relatively slight plasticity of animals.
2. Report upon any deformities of bony tissue which you may have chanced to note in children.

THE LESSON APPLIED

- 1 Why are adjustable seats and desks indispensable in the schools if the natural physical plasticity of children is not to be done violence to?
- 2 Can you think of any argument for the introduction of moral instruction into the schools?
- 3 Very widespread efforts are being made at the present time to provide vital instruction in good citizenship in the lower schools. From the standpoint of neural plasticity, why is such a provision a wise one?
- 4 Why are children of foreign birth—and to some extent of native birth but foreign parentage—likely to have poor powers of linguistic expression?
- 5 Since children's minds are in a plastic condition they are able to learn new data with relative ease. Obviously, this plasticity is a valuable ally to pedagogy. It is also true, however, that wrong data can be assimilated just as readily as correct. What educational principles of prime significance can you extract from this condition of neural plasticity?

SELECTED REFERENCES

- 1 Kirkpatrick, E A *Genetic Psychology*, pp 111-19
- 2 Washburn, M F *The Animal Mind*, chap 10

LESSON 30

HABIT (*continued*)

What to look for in the observation period.

1. Any good or bad habits or attitudes observable among the children. For example, speech habits, habits of personal hygiene, attitudes of truthfulness or deceitfulness, alertness or torpor, etc., etc. Note any degree of variations in any given habits from grade to grade.
2. To what extent the teacher appears to realize one of her important functions to be the encouraging of good habits and the discouraging of undesirable ones in her children.

The strength of our habits. You are familiar, no doubt, with many of the popular sayings concerning the nature and strength of our habits. Among them are such statements as these: "Habit is a cable which we cannot break", "we are creatures of habit", "we are bundles of habit", "habit is second nature"; "habit is ten times nature"; "life is three quarters habit", etc., all of which indicate roughly the importance of habit in our lives. If you for any reason doubt the accuracy of these and other axioms bearing upon the power of habit, you have but to observe closely your own actions at any time and in any given situation and compare them with your behavior at any other time in the same situation. Take, for example, the matter of your habits of gait. You always walk in approximately the same way and at the same rate of speed. Perhaps you even walk habitually on one particular side of the street in preference to the other side, although it would be impossible for you to tell why. You have likewise observed in your friend characteristic peculiarities of gait, and could doubtless recognize her approaching even before she was near enough to enable you to see her features clearly: there was something distinctive about her walk. Or again consider the matter

of handwriting. It is as hard for you to write any differently from *your* way as it is to walk differently. And how readily you recognize the handwriting of your friend on the envelope even before you have opened the letter; there is likewise something distinctive about her writing. And habits of speech! How many, many times during the day you are guilty of the same grammatical error which is your besetting grammatical sin. You are conscious of the incorrectness or vulgarity of your speech, and do your best to make it purer, and yet often without apparent success. It is likely that you have a favorite ejaculatory expression which springs to your lips whenever you are surprised or angered. The quality of your voice, its pitch and tone, your care or carelessness in enunciating your words, the rapidity or slowness of your speech, its characteristic easiness or jerkiness, — all these qualities of your everyday speaking are entirely habitual, and you can no more change them than you can hope to change any of your other fast-formed habits.

It would be idle to attempt to enumerate all the peculiarities and idiosyncrasies of behavior which differentiate every one of us from every one else; no two are wholly alike in the matter of their habits. There are, for example, our food habits and our food-taking habits, table manners, amusement habits, habits of politeness and chivalry and deference, our habits of personal hygiene, toilet, bathing, etc., habits of combing and arranging our hair, of posture in sitting or standing, of tastes and preferences, etc., which are quite distinctive for every one of us. Even in dressing in the morning, you are doubtless little more than automatons, in that you invariably follow the same procedure, order, and style. In short, if you press this interesting inquiry further, you will find that there are few things indeed which you ever perform a second or a third or a tenth or a hundredth or thousandth and perhaps millionth time that are not performed almost exactly as they were at the very first.

Even our attitudes of attentiveness and inattentiveness,

of inquisitiveness, of perseverance, of toleration or bigotry, of political or religious conviction, of thrift or of extravagance, of guilelessness or deceitfulness, of open-mindedness or narrow-mindedness, of easy conviction or of critical judgment, of suspicion or of naïveté, are all in themselves the logical and unescapable outcome of habitual ways of thinking or acting.

The physiological basis of habit. We pointed out in the last lesson that it is the nervous system which is responsible for all possible modifications of behavior resulting in habit. The original condition of the neurones is such that, once one pathway through them is linked up, that same pathway tends ever afterward to be linked up *whenever the same stimulus is applied*. This tendency of nervous units to maintain former connections may be termed the physiological basis of habit. Let us illustrate the matter in this way. Suppose by dint of much encouragement on the part of the mother and much grotesque effort on its own part the six-months-old infant one day responds to vigorous invitation by saying "mamma!" for the first time. Immediately it is showered with kisses on the part of the parent and its linguistic attainments exploited before the father and the neighbors, with the result that the infant takes a certain amount of conscious pride in its abilities, and perhaps soon rewards its enthusiastic teachers by saying "papa!" or, more likely, "dada!" "Behold!" exclaim the parents, "the baby can talk!" Of course the baby cannot talk yet; many painful efforts and much childish prattle must intervene before it can really talk as a six-year-old talks. But the ability to talk is begun. Deep in the nervous system of the child the neurones have been partially linked together, and from day to day others of them will be similarly linked. The ultimate and characteristic speech habits are being acquired.

So with any other future habits of the child. The beginnings are crude and faulty, but they are beginnings, and subsequent repetitions of the same responses will ultimately

polish and round them off into fast habits. From the point of view of the nervous system, then, habit is the result of repetition of any given response. The nature of the nervous pathways is such that once any one of them has been traversed by stimulus and response, future passage of like stimuli to like responses is made with less friction. Practically speaking, those of our habits which are most deeply rooted are those which have been repeated the greatest number of times; those which are lightly rooted are those which have been repeated but relatively few times. Some habits which we have, like those of speech, toilet, etc., are relatively unchangeable; we are their slaves for the most part, and we are because the nervous centers controlling them have functioned so invariably and long that, given the situation, instantly the response ensues. So much so, indeed, that many of our habits are reduced to the level of our automatic and reflex acts which latter make up those responses of the longest racial duration, just as our acquired habits comprise those which we as the latest product of our ancestral line have formed in addition to those fundamental ones which the race has handed down in us. Thus, the profane man may respond to a vexing situation with an oath, just as readily and reflexly as he may respond by drawing his hand away quickly from a hot surface upon which it chances to come in contact. The old saying that we are the slaves of habit may be seen thus to be quite justified. A nervous pathway that has been linked up ten times by the individual is nearly as much our master as one which has been linked up for untold ages in racial behavior.

Habit and childhood. In the preceding lesson we took occasion to refer to childhood as the most plastic age. Interpreted in the light of this present lesson, that statement means simply that, inasmuch as the neurones in childhood are free to be linked up in any order or sequence, childhood represents the greatest possibilities and opportunities in the matter of habit. "You cannot teach an old dog new tricks," another popular and relatively truthful axiom of

life, implies the necessity of teaching the tricks during the time in which the dog is still young. In other words, childhood is the time for instilling those habits and attitudes into human beings which will be fundamental to future health, happiness, and normal living. In this sense, every adult is after all but a child grown up. True, many of his reactions are acquired as new situations confront him, and as new decisions have to be made, but beneath all his later acquired reactions are those which he learned at his mother's knee, or in the bosom of his "set," or under the gentle formative influence of his school days. In the fundamentals, you yourself are little different from what you were at sixteen, and at sixteen you were little different from what you were at ten. No matter how many and varied may be the later neurone connections, the primary ones are but strengthened with time. There is no truer saying than this: "Just as the twig is bent, the tree is inclined." It may be that in childhood play you chance some happy day in the forest to tie a knot in a young, slender sapling, prompted it may be by curiosity to see what would happen in the growth of the young tree. Ten, twenty, fifty years afterward, if the tree was still living and you were to stray again in the same forest of yore you would find that the knot was still there where you had tied it, and that the mighty tree had not been able to outgrow the mutilation which it suffered at your hand many years before. As you bent it while it was yet a sapling, so it was inclined as a mighty tree. Apply the metaphor and you have one of the greatest truths of human life and human nature.

Good and bad habits. One often hears it said that Mr. So-and-So has the smoking habit, or the drinking habit, or the swearing habit, but less often does one hear of the non-smoking habit, or of the non-drinking or non-swearing habits. It should be remembered, however, that habits are just as often good as bad—perhaps oftener. Apply to the natural plasticity of the child's nature the forces and formative influences of a poor or vicious environment,

within the limits set by heredity, and you will inevitably produce a vicious adult; apply to that same plasticity the formative influences of a beneficent environment, and you will inevitably produce a refined and respectable adult. Prune and cultivate wisely the sapling and you will be rewarded with a stately and profitable tree; neglect it or mutilate it and you will be rewarded with a gnarled and worthless abortion such as nature never intended.

The breaking of habits. For the same reason that habits are easily formed in early life they are likewise easily broken at that period. The plasticity of the nervous system is such that, while generally speaking the more times a given response is made the more likely it will always be made when the situation calling it forth arises, repetitions made in childhood count relatively less than when made subsequently. In other words, the younger the organism the more readily nervous connections, once made, can be set aside and others substituted in their place. It is this fact which makes it possible for those whose earliest years have been passed in unfortunate or positively vicious surroundings to make themselves over, as it were, in later childhood and grow up into most desirable citizens. The good reform school, for example, rescues boys and girls from bad influences, and endeavors to make wise and beneficent substitutions of desirable for undesirable responses. On the other hand, there is relatively little hope for the child who continues in his evil environment throughout youth. Thus, Oliver Twist could be rescued from the sordid, criminal surroundings of Fagin and his tribe, but for Fagin himself, or for Daniel Quilp, Dickens could imagine but one end and one outcome. Witness, for example, the unsuccessful efforts of the inveterate smoker to break his habit, even though he himself despises it and makes sincere effort to do so. So with speech habits. The child may grow up in a home where no heed whatsoever is paid to good English, but when that same boy or girl goes away to high school it is relatively easy to fall away from the slackness or careless-

- whether they are primarily (a) habit-inducing or (b) informative subjects hygiene, arithmetic, grammar, composition, history, geography, nature, drawing, manual training, vocal music, reading
- 4 What is the real value of drill in such subjects as writing, arithmetic, language?
 - 5 Which agent is the more responsible for the correctness of a child's habits the home or the school?

SELECTED REFERENCES

- 1 Angell, J. R. *Psychology*, pp. 66-79
- 2 Betts, G. H. *The Mind and its Education*, chap. 5

LESSON 31

HABIT (*continued*)

What to look for in the observation period

1. Evidences that nurture has done little in some respects to modify original nature in the children.
2. Whether some habits in evidence are more firmly rooted than others. If so, which appear to be relatively fixed? Which lightly rooted?
3. In how far the chief aim of the lesson is the fostering of valuable habits and attitudes in the children.

Habits based in instincts. Were it at all conceivable that a child possessed no instinctive tendencies, it would necessarily follow that that child would never be able to formulate any habitual forms of response, for it would have no original capacities upon which to build them. The original endowment of instinctive tendencies makes up, in other words, the elements out of which later acquired tendencies, or habits, are fashioned. Nature provides the inherent capacities and possibilities which nurture transforms into characters and skills and attitudes. In every generation of every age this genetic endowment of the racial past is fashioned by circumstance into varying moulds which we call habits. It follows, therefore, that at the root of every acquired form of behavior which the child of the race manifests there is at least one instinct, and more likely several. The instinct we may call the necessity of the race; its derived habit we may call the necessity of the individual. The race wisely leaves its mass of endowment plastic, and therefore subject to educability. In this chapter we are to strive to see how nurture succeeds in moulding nature according to the customs or the attitudes of the times.

Imitation and habits. You may recall that when we were

preferences, and even smoking and drinking: the tendency to imitate is not innate, but rather the result of either training or the conscious forecasting of the satisfaction which will result from imitation.

How does nurture modify nature? We said a moment ago that we were to be concerned in this lesson with the problem as to how the forces of the environment make it possible for all of us to control our own destinies, at least to a certain extent. Or in other words, in what sense is it true that nurture is able to modify nature, nurture being understood to mean environment and nature to mean instinctive tendency? Let us take as our first illustration the matter of table manners, or, more properly speaking, table habits. You may have been much embarrassed on some occasion when guests were present to note your small brother's eagerness to take a larger portion upon his plate than was either polite or safe, considering the available food and the number to be supplied. Or again, you may have observed that the same small brother had no hesitancy in taking the *last* muffin from the plate, or the *largest* piece of cake, or the *reddest* peach, as though his values were always superlatives, as indeed they usually are. But why did your small brother's behavior cause you concern? Surely for no other reason than that it indicated to the guests lack of proper training in table manners on the part of the child. Your embarrassment to some extent reflected back upon yourself and all the other adult members of your family who had obviously been negligent in the matter of training the child properly.

But now look at the situation from the point of view of the boy. Why did he fill his plate to overflowing, and why did he select the choicest of everything available for himself? Merely because his instincts were still in their original condition. Food was necessary to his sustenance; here was food. Instinct made him seize and appropriate sufficient for his wants. Better take too much than not enough. According to nature, satisfaction comes only when there

is enough. And so, responding naturally and spontaneously to his instincts to get food, the young child proceeded to do so. Were it not for the fact that we adults are trained to control this particular instinct we should all behave at the table in much the same way as does the child. But by dint of careful instruction we have acquired the habits of politeness at table, which fact constrains us to appear to be content with a meager portion and to refrain from serving ourselves with the last roll or the largest piece of cake. The child's nature is still in that unmodified original state which you have often observed in the food habits of swine, or chicks, or any other lower animal: there is no thought for others; satisfaction of self is the only satisfaction sought.

As another illustration of the force of original nature before and apart from training, witness the selfishness and thoughtlessness of the play instinct in its earlier expression. The very young child, for example, tends often to rebel against sharing his toys with other children; he would rather keep his sweets in his own pocket to enjoy secretly by himself than to divide them among his companions; in the game or contest he covets for himself the first place or the favored position; he tends rather to play unfairly than fairly at the point in the game when the crisis is imminent; his attitudes toward right and fair play are still unformed. But he does not participate in the play of his fellows very long before he begins to modify the promptings of his original nature into more or less proper habits. He is taught to share toys and sweets with his brothers and sisters, and even with playmates outside his own family circle; the socializing influences of his play, to which we have already referred, slowly combat the earlier unsocial attitudes and he comes to develop an elementary code of play-ethics and standards which form the nucleus of later habits and attitudes of fairness, constraint, and self-control. Nature would have him a selfish, anti-social, thoughtless child, and therefore an adult of like characteristics; nurture would tend to make him an altruistic, social, thoughtful being whose in-

dividuality was merged in the welfare and happiness and will of the group.

Other habits resulting from modifying instincts. Let us in the light of what we have just said reexamine some of the instinctive tendencies which we have already studied for the purpose of determining what habits are based in them. From the instinct of curiosity, for example, are derived habits and attitudes of investigativeness, industriousness, and the taste for experimentation. From the instinct of ownership and collecting are derived habits of thrift, economy, close application, and many of the associated responses which incite all of us to accumulate a competence and to establish homes of our own. From the instincts of rivalry and emulation arise also our habits of industry, patience, and indefatigable expenditure of energy. From the gregarious instincts come our attitudes and habits of forbearance, courtesy, self-abnegation, altruism, good-fellowship, etc. Out of the maternal instinct the habits of family and home evolve. Even the fighting instinct has much to contribute to the positive side of life in the way of attitudes of honor, and attitudes toward the right and the just and the wholesome in life and its relationships. By an easy sublimation the fighting response is transferred to the habits of being always found on the firing-line of good citizenship, standing always for the right and willing to sacrifice and fight for the right. From the instinct which prompts the child to seek approval and to display his abilities and possessions before others, come those important attitudes of later life which make us abide by the dictates of custom, obey and uphold the laws which govern society, and direct our lives in conformity with the ideas and ideals of the times. Can you add to this list of habits which are formulated from the original instincts of childhood?

The inevitableness of habit. In a former chapter we spoke of the inevitableness of heredity. It is fitting here to refer also to the inevitableness of habit. In the former case, the

contribution of racial ancestry to the individual was unes capahle, in the latter the contribution of his every act to the hahits and attitudes of the individual is likewise unes capahle Physiologically speaking, as we said, there can he no passage of nervous energy across a nervous pathway without some modification of that pathway which makes it the more certain to conduct a similar current in the future when the conditions which originally called it forth are right Every time we delay in making a judgment, or in putting a plan decided upon into execution, or in making a decision, we are probahly rendering future celerity in these acts of will less possible Every time we employ an inelegant expression, or fail to observe some proper courtesy, or follow the line of least resistance as against a line of action which we know well is the proper one, we are initiating or intensifying hahits and attitudes just as inevitahly as when we employ the elegant expression, or observe the fitting courtesy, or execute our best judgment There can he no half way course in the matter of hahits, *every response is recorded in the nervous system* It is therefore of the greatest importance that the original hahits which children form shall he wise and proper rather than the reverse

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Look up a good discussion of 'conditioned reflexes, and endeavor to relate the information thus gained to the formation of habits
- 2 Refer to the list of ten habits which you prepared for Lesson 30 and endeavor to discover from what instincts each is an outgrowth
- 3 In the case of a habit which you are striving to form or break, what instincts are opposing your efforts if any?
- 4 Study James's laws of habit formation
- 5 Distinguish between habits and ideas

THE LESSON APPLIED

- 1 One of Rousseau's chief contentions was to the effect that children should be brought up in a state of nature, and quite separated from other children during their earlier years From the viewpoint of this lesson what is an insuperable objection to such a plan of education?

- 2 How does the socialized school provide exceptional opportunity for the favorable influence of nurture upon nature in the promoting of desirable social habits?
- 3 What are some fundamental habits which the child who has come up through our public schools should have formed to a considerable degree at least because of the schoolroom influence?
- 4 In how far does the learning process in children depend upon imitation? How does the degree of imitativeness diminish or increase from grade to grade as the child passes upward? Does it vary in different subjects of study?
- 5 What procedure might you follow in helping a child to overcome an undesirable habit such for example as tardiness untruthfulness etc?

SELECTED REFERENCES

- 1 Kirkpatrick E A *Studies in Psychology* chap 1
- 2 Rowe S H *Habit Formation and the Science of Teaching* chap 7

LESSON 32

SENSATION

What to look for in the observation period:

1. Evidences among the children of defective sense organs, especially of eyes and ears.
2. If a lower or kindergarten grade is being observed, do you find the teacher making use of any special games or devices designed to sharpen the senses of the children?
3. Evidences of individual differences in acuity of the sense organs which appear to affect the school work of any of the children.

Definition of the term. You are accustomed no doubt to employ the word "sensation" in a somewhat loose way in your everyday speech to indicate an unusual spectacle, or something bizarre and fantastic. One often hears it said, for instance, that the lecture, or the speech, or the novel, or the dress of an individual, etc., created a sensation. In a psychological discussion of the term, however, we must give it a far more restricted and definite signification than this. We may define a sensation in the proper sense of the word as being the immediate result of the stimulating of a sense organ. We cannot say that it is the ultimate, or mediate result of such stimulation, for all of the higher thought processes are ultimately based upon original stimulations of sense organs; we can only say that it is the immediate and simplest result of sense impression.

Now you have been accustomed to understand that there are five senses: sight, hearing, taste, smell, and touch. In order to be strictly accurate, however, it will be necessary to further subdivide and extend this number to seven. Touch, besides, is divisible into three distinct types of sensation: temperature (i.e., hot or cold), touch proper, and surface pain. In addition to the original five senses, as you are familiar with them, we must include in this discuss-

sion two others — organic and kinæsthetic, or muscular. By kinæsthetic, or muscular, we understand those sensations resulting from muscular balance, strain, coöordination, etc., such, for example, as the sensations which come to you in descending in an elevator, or which result from long continued use of the right hand in writing. By the former or organic sensations, we understand those sensations which come from the internal organs of the body, as, for example, in such organic illnesses as indigestion, toothache, etc.

Complete list of sensations. The complete list of all possible sensations which may on occasion pour in upon us from the outside would, therefore, be as follows:

- (1) Visual
- (2) Auditory.
- (3) Gustatory.
- (4) Olfactory.
- (5) Tactile.
- (6) Organic.
- (7) Kinæsthetic (or muscular).

All possible information from the outside or inner world can come to us only through these seven doorways. Of them, you will probably agree that sight is the most indispensable, although life without any one of them is decidedly a life of limitation. If you can fancy a child born without any of the first five in the list, you can conceive for his maturity no knowledge, no ability, nothing save complete and total mental oblivion. You probably know one or more persons who are either blind or deaf, or both, and whose condition inspires sympathy and commiseration on your part. In this lesson we are to study the evolution of each of these senses in the child.

Nerve pathway of any sensation. We said above that the sense organ represents the only doorway into the brain, and therefore into the intelligence of the individual. But the sense organ itself is only the doorway. After a stimulus has passed across the end organ (which is another name for a sense organ) it travels along the sensory pathway, just as

with much of the beautiful and the majestic and the artistic which make it the more worth living.

Earliest sensations of infancy. We said above that there are seven different doorways into the mind of the child. Let us now endeavor to understand how it is that those several doorways are pushed ajar and afterward opened wide to the inpouring of sensations. First, the sense of *sight*. In the earliest days of infancy there is very little sensitiveness to light, although it is probable that from the very first day the infant is vaguely conscious of light stimuli. Extremely bright lights appear to cause it discomfort, and dazzling lights are probably actually painful to its weak eyes. Mild light causes general contentment and, from about the third week on, its eyes are attracted to bright surfaces, such as sunbeams on the floor, or the patch of reflection from the lamp upon the ceiling, or even the face of the mother. Contrasts of brightness and darkness are likewise dimly appreciated from about this time. It appears from the studies which have been made of infants that any notice of color lags somewhat behind the inception of sensations of light proper. Miss Shinn's niece was attracted on the 23d day to a red kerchief which it appeared to watch with considerable delight. In general we may assume that sensations of light contribute little more than a vague feeling of satisfaction to the infant previous to the attainment of its third week of life.

Hearing is probably absent altogether for the first two or three days, coming into some prominence only in response to sharp auditory shocks which are sufficiently loud to compel even the sluggish nerves of hearing to respond.

The *taste* sense is rudimentary at birth. Various strong tasting substances have been placed in infants' mouths, such as camomile tea, cod-liver oil, soda mint, aromatic spirits of ammonia, etc., all of which are in most instances swallowed like so much water. Even a one per cent solution of quinine, which adults find strongly bitter, fails to call forth any symptoms of unpleasantness in the infant.

who often takes a two per cent solution of the same substance before making a single grimace.

The sense of *smell* is one of the slowest to be evolved. Miss Shinn thinks that not until the tenth month of life does there begin to be any spontaneous activity of this sensation. Strong, odorous substances persistently experimented with will usually provoke a distinct reaction of unpleasantness, or the reverse, but so far as actual spontaneous exercise of the sense is concerned it appears that such exercise is rarely found in children during the first half year at least.

Of the threefold aspect of the sense of *touch*, it may be said concerning the temperature sensations that variations in the temperature of the nursery are not noticed unless such variations be sharp: coldness is more quickly responded to than warmth; concerning the sensations of surface pain it appears that, while it is not easy to experiment upon infants, sensitivity to pain is extremely low during the first days of life. Slight surgical operations would indicate this to be true, as would also certain experiments which have been performed by enterprising inquirers such, for example, as Genzmer. This investigator actually used the needle-prick upon fifty babies and concluded that for a considerable period after birth there was present no sensitivity to pain. It is possible, however, that more extensive stimuli, such as pinches and slapping that would stimulate a larger number of nerve endings would elicit manifestations of pain. The third aspect of the tactile sense, touch proper, evolves also somewhat slowly, except in the case of the areas contiguous to the mouth and eyes, which manifest sensitivity to touch from the very first. Upon other areas of the skin, however, the response is at best dull during the first few days, consisting largely in a vague "feeling of general comfort in being cuddled."

Organic sensations in infancy are not easily determinable. It appears that sensations of thirst and hunger are present very early — perhaps after the second or third day. And

yet, strange to say, if a rubber nipple or other small object he introduced into the mouth of the infant who is apparently fretful because it is hungry, it forthwith manifests symptoms of satisfaction and contentment. Organic pain is likewise probably felt early. You have no doubt often remarked when you were caring for the baby the distinctly different forms of crying in which it indulged: the hunger cry differed from the indigestion or colic cry, and the latter from the fatigue cry. This would indicate somewhat distinct sensations from the internal organs.

The *kinesthetic* sense, too, is in evidence from the first day or so. One investigator found a two-day-old boy starting distinctly when the scale of a balance in which he lay fell down quickly and with a jerk. Babies are usually rather sensitive to jarring and to being tossed aloft. They also become easily fatigued from lying long in one position, which fact would seem to indicate the presence of muscular sensations from the back or shoulders or limbs.

Developments from these crude beginnings. Out of these crude and uncertain beginnings all the keenness of eye and ear, and all the discriminations of taste and smell, and all the lightness and dexterity of touch, and all the fitness of muscular coordination and balance are to be evolved! It would seem that nature has a difficult task upon her hands. But no! Almost before even the mother knows it the child's senses are so sharpened that there is nothing objective in its entire surroundings, indoors or out, which does not have to be explored in order that its mysteries may be yielded up to the omnivorous senses of the young discoverer and adventurer in a world filled with innumerable things to challenge and entice.

The child lives in a world of sensation. By the time the infant has reached his first birthday he can ordinarily toddle about by himself, and from that time on whatever of its secrets the world has not yet yielded up to him are speedily investigated. As infancy shades off into early childhood the entire atmosphere in which the child of nature lives, moves,

- of the senses or will the evolution of sharp senses come about in directly through the play and other interests natural to childhood?
- 3 Would you expect a child brought up in closest contact with an environment rich in appeal to the senses to be capable of more intelligent participation in the educative process than another child of similar native ability but brought up in an impoverished environment where sense appeal was slight? In general should a city or a rural environment be the better place in which to rear children?
 - 4 Upon which of the senses is school work most dependent? Which is the sense most likely to be impaired? Is there any causative relationship between application to school work and impairment of this sense?
 - 5 What precautions should be taken by a teacher to make it possible for the nearsighted or slightly deaf children to participate to the maximum of their ability in the work of the school?

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- 2 Betts G H *The Mind and its Education* chap 6
- 3 Shinn M W *Biography of a Baby* chaps 3 and 5
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(To be used largely for reference purposes)

indistinct series of stimuli which he would be quite at a loss to assign any meaning to. The infant's mental life is a jargon of seemingly unrelated and unintelligible events. He has not learned to bring mental order out of this sensory chaos. To him it is all James's "great, hlooming, buzzing confusion," without significance and without purpose. He is living in a world of haphazard, topsy-turvy, upside-down feverishness in which Brohdungnagians and Lilliputians and their effects and belongings totter about in endless disarray and disorder. True, he watches them, he listens to them, he feels them, he even tastes and smells them, and yet they possess for him as yet no meaning. Fancy yourself if you can being suddenly transported into some super-world wherein everything is wholly new and wholly distorted, and you will appreciate better the mental state of the infant as it contemplates its little world.

But as the infant grows older, slowly, very slowly, the universe about him begins to yield up its mysteries, although in amusing, fantastic forms often. With every additional day of his life he becomes able to answer the absorbing question "what is it?" with respect to a great many objects and situations, although still the mysterious world stretches away in a mist before him. We said in the preceding lesson that the child lives in a world of sense experience; that is true, and to the end that with wider experience and new sensations he may the better come to be familiar with that world. If you can imagine a child in whose breast there was none of this impulsion to explore and investigate and try out and experience, it is very evident that the number and faithfulness of that child's perceptions would never approximate those of children who normally search diligently after wisdom in the form of new experiences and new emotions and sensations.

Earliest perceptions of infancy. Naturally the earliest experiences which the infant consciously has are those which center around the food taking process. Very likely the first things in his environment which he may be said to

perceire — i.e., *know* — are his bottle and the movements made by the mother to satisfy his hunger. The perceptions of the first days of life are those apparently which depend upon the sense of sight and to some extent, hearing. As the days pass, however, the infant's eyes and ears become sharper it is true, but are aided gradually in their seeking after knowledge by the evolution of the other senses. You can deceive the infant with camomile tea or with a solution of quinine, or with the point of your finger placed between his lips, for a season, but soon he will be in a position to refuse all of these deceptive things and will accept only his proper food. All this is because he has learned to recognize the taste of milk. So with his other senses. Take the touch perceptions, for example. You can take away the bright, shining watch from the baby's fingers and substitute for it some less delicate plaything, but before you have done this many times the infant will refuse to take delight in the substitute and will demand the original shiny object. *he is learning to know.*

After all, however, the world into which the child has been ushered is so completely filled with strange and wonderful things that information about them all is well nigh a hopeless task. Consider, for example the case of the baby's own hand. Possibly you have watched an infant when he first became interested in the fact that he possessed a hand. For several seconds it may be he turned it about, peered at it with his unsteady eyes, felt it over with his other hand, wriggled the fingers, perhaps stuck them into his mouth — and all this because he did not know that it was a hand and certainly did not even know that it was attached to himself, nor even that there was any *himself*. By dint of experience and use and perhaps slight injury to it, however, he came soon to understand what its purpose and identity were. It is only in some slow, chance way such as this that the child succeeds ultimately in ordering the chaotic world around him and informing himself concerning its contents. But then too, so many of these

strange, unfamiliar objects appear to change shape or form or character at different times that even though the child has learned something about them, all his previous information seems worthless in the light of his next observation of them. Take your own perception of a simple table, for example. It looks quite different when you observe it from an angle from what it does when you look squarely at it from the front or side. If you have ever tried to draw a table from the object itself, you can perhaps appreciate this truth better. But if your own perception of a table varies with your viewpoint, what must be the case with the infant's perception of the same object, who sees it now from underneath, now from his mother's arms, now half enshrouded in its cloth, now quite bare?

Thus, not only are the child's sense organs tardy in affording him accurate information about the things around him, the fact that so many objects undergo modifications or transformations complicates matters all but hopelessly. Miss Shinn, for example, writes thus of the surprise of her six-months-old niece at beholding her grandmother's head from behind instead of from in front, as had been customary:

Later the same day she sat in my lap watching with an intent and puzzled face the back and side of her grandmother's head. Grandma turned and chirruped to her and the little one's jaw dropped and her eyebrows went up in an expression of blank surprise. Presently I began to swing her on my foot, and at every pause in the swinging she would sit gazing at the puzzling head till grandma turned or nodded, or chirruped, then she would turn away satisfied and want more swinging. At first amazed to see the coil of silver hair and the curve of cheek turn into grandma's front face, the baby watched for the repetition of the miracle till it came to seem natural, and the two aspects were firmly knit together in her mind.

Such is the confusion resulting from different points of view in the mind of the uncertain child!

As many senses as possible appealed to. If you have ever observed a baby during one of its investigative moods — and in a sense every mood of the healthy infant is an

ing upon topics of conversation discussed by parents. The following is a quotation from Dr. G. Stanley Hall's famous study of the contents of children's minds on entering school, or, in other words, of the percepts and concepts of children of school age. It was a study made of Boston school children, the method being to ask those children entering the primary grades what they knew about certain supposedly familiar conceptions.

Skeins or spools of thread were said to grow on the sheep's back or on bushes, stockings on trees, butter to come from buttercups, flour to be made of beans, oats to grow on oats, bread to be swelled yeast, trees to be stuck in the ground by God and to be rootless, meat to be dug from the ground, and potatoes to be picked from the trees. Cheese is squeezed butter, the cow says "bow-wow," the pig purrs or burrows, worms are not distinguished from snakes, moss from the toad's umbrella, bricks from stones, etc.

What wonder that the investigator concluded that "there is next to nothing the pedagogic value of which it is safe to assume at the outset of school life." But even though all this is fascinating, it points to a serious defect in the early training of children. How poverty-stricken are most modern environments of childhood! What can there be in a city block or flat, and in the narrow, sordid streets of the city, or the level, monotonous landscape that can satisfy the natural craving of the child for perception and conception? For experience and information?

Perceptions of space and time. Who of us has not smiled at the absurdities of judgment as to time and space in children? The infant holds out its arms across limitless space as though to grasp the moon; it reaches for the sunbeam on the floor; it bends its body forward as though it could reach the toy on the rug at the other side of the room. So with time: telling the time of day is a hopeless puzzle for months and even years. Told to return home in an hour, the child has almost no notion of the limits of an hour. Minutes and hours and weeks and years are alike unintelligible to the younger child as measures of time-ex-

LESSON 34

ATTENTION

What to look for in the observation period.

1. Evidences of the fluctuation of children's attention. Do you note any gain or loss from grade to grade in degree of ability to attend?
2. Whether all the pupils are equally attentive to the lesson. If not, can you suggest possible explanations of individual variation in this respect?
3. Any special devices employed by the teacher to stimulate flagging attention. Do you note differences in the ability of teachers to secure and hold the attention of children?

Definition. Attention may be defined as the power of the human mind to *select* those stimuli among all the hundreds of other possible ones upon which it shall be focussed. Or, we may define attention as the ability to focalize a given object or idea in consciousness. You are able, for example, to attend to a picture, or the ringing of a bell in the church tower, or the odor of roses in the garden, or the taste of the grape, or the feel of velvet, or the disagreeable internal symptoms of indigestion, or the muscular twitchings of a fatigued hand. Any one of these objects or situations you may select out of your surroundings at any given time and pay attention to it. Or you may even pay attention to abstract ideas which you have formulated as the results of a great multitude of past experiences. You may compare and weigh these ideas in what we term reasoning, and in this last-mentioned process lie the highest possibilities of attention.

Attention fluctuates. Attention is not a static thing, even in adults. Still less is it so in children. The things to which we pay attention are continually changing. Suppose, for example, you are sitting at your study table hard at work upon some school task. Let some one open the

given the term *focal* idea; i.e., the idea in the foreground or *focus* of consciousness. Let *X*, for example, represent the train of ideas connected with the studying of the lesson referred to a moment ago. You are engaged in unravelling the meaning of an especially difficult page or paragraph, in the interpretation of which all your mental powers are engaged. But now, suddenly let idea train *A*, which is nothing more than a dim consciousness that some one is talking in the next room, be intensified by that same person calling aloud your name, and immediately idea group *X* flees away from the focus of consciousness and idea group *A* springs in to take its place. Or, again, suppose the hissing of the radiator is suddenly violently increased. The same thing happens: your focal idea group *X* yields place to the fringe idea group *B*, which is your vague awareness of the noise of the radiator, and *X* and *B* exchange places.

It may be said, then, that if it were possible to take a snapshot of our mind at any given time we should find the resulting negative to be similar in structure to the diagram. Some central idea group upon which we were working or about which we were musing would occupy the focus, while in the background would be clustered probably several somewhat related idea groups which would represent the fringe of the negative. And any one of these fringe ideas is actively striving to drive out the focal group and supersede it; the latter retains its place in the foreground only because the intensity of the fringe stimuli is weak, or because we are spontaneously interested in the focal chain, or because by the conscious exercise of our will power we force ourselves to hold to the matter in hand. But even in the last two cases we shall not succeed in shutting the fringe group out if that group chances to become too insistent. In a sense we are somewhat at the mercy of compelling stimuli, and the function of choosing to what we shall attend is therefore partially limited by circumstance.

We said above that even the focal ideas are continually changing their aspects or points of view. If you will try

this simple experiment, perhaps you will come to appreciate the necessity for such constant changing. Look fixedly at the numeral XII on the clock for several minutes, endeavoring to allow no fringe ideas to exclude the focal idea — the figure XII. You will probably discover that for a second or two your eyes remain firmly gazing at the XII, but that very soon you catch some such idea groups as these leaping momentarily into consciousness: "It is exactly 10 o'clock"; "but I must look at the XII again"; "I wonder how long I have been looking?" "No, I must look only at the XII"; "the clock is round"; "my next class is in . . ." "But here! I am thinking of something else." And so your thoughts travel along on the waves of consciousness, now bringing you back to the original *X* idea group, now bearing you far away from it. Thus, if a stimulus does not change or vary you cannot possibly attend to it steadily. The waves of the stream of consciousness must go on and on. Nothing can check their progress, and only by exerting voluntary will power are you able to redirect the surging stream back again to *X*. It does not matter what is the nature of *X*: it may be the figure on the clock, or it may be a picture, or it may be a problem in arithmetic, or a moral decision; in order to attend to it at all, it must either be changing *in itself*, or else our own associations which it calls up must flow on and on. Naturally attention is easiest to focal idea groups which change in themselves, it is easy, for example, to pay attention to a motion picture, or firemen on the roof of a burning building, or a musical melody. It is much more difficult to attend to an object which *in itself* does not change, because the initiation and direction of our attentiveness is subjective. The latter situation is at odds with the law of inertia; the former is in harmony with it.

We have noted, therefore, two aspects of adult attention. In the first place, the attentive state includes both focal and marginal idea groups; and in the second place, these groups must continually be in flux, resembling the crest and the trough and the succeeding crest of the waves.

Three kinds of attention. There are three different kinds of attention, or three situations in each of which we pay a different form of attention according to the stimulus which calls it forth. They are (1) involuntary attention; (2) non-voluntary, or un-voluntary attention, and (3) voluntary, or forced attention. Let us discuss each of these in order.

Involuntary attention. In the example given above you will recall that we allowed *X* idea group to represent the page in the textbook upon which your attention was focussed, while idea groups *A*, *B*, and *C* represented fringe groups, such as low, indistinct talking in the next room, the hissing of the radiator, etc., all of which latter you were vaguely conscious of as making up the sum total of your consciousness. Now, when the talking increased in intensity and volume, and you chanced to overhear your own name called by some one of the group, immediately idea group *A* (the talking in the next room) forced *X* from the focus and darted itself into the foreground of your attention. In other words, you paid involuntary attention to a stimulus. You could not help allowing the thoughts of your lesson to lapse, and perhaps springing up and hurrying into the other room to join in the conversation. Involuntary attention may therefore be defined as attention which we pay because we cannot help it. More accurately speaking, we pay involuntary attention whenever a *novel*, or *intense*, or *sudden stimulus* strikes upon a sense organ and so dislodges the focal ideas in mind at the moment. Other illustrations of involuntary attention would include, for example, attending to a sudden explosion, or a sharp flash of lightning, or the cry of "Fire!" or an odor of escaping gas, or a sudden sharp cramp, or a cut finger, or a piercing scream, or any other stimuli which force themselves into our stream of consciousness. Think, for example, of the crowd on the street attracted to a police patrol or to an accident. Think of the many-colored and changing electric-light signs and the cleverly arranged ad-

in some startling way (involuntary), nor perhaps because you had been led by a personal interest in the subject matter to familiarize yourself with it (spontaneous). Rather, you attended to the lesson because you realized that the mastery of it was expected of you, and you would suffer social disfavor and injured pride if you came to class to-morrow and were obliged to confess that you did not have your lesson. We may define voluntary attention, therefore, as the sort of attention which we pay as the result of *exercising our wills*. We *voluntarily* (Latin, *volere*, to will) select such idea groups as are concerned with the lesson and exclude all other groups from our minds. It may be that spontaneously we should have chosen to read an interesting story, or go to the theatre, or pass the evening with a friend. But our knowledge as to the fitness and appropriateness of things prompted us to apply our minds to the book rather than allow ourselves to do other more interesting matters. Other illustrations of the voluntary type of attention may be observed in such situations as the following: listening to a very uninteresting speaker; studying a railway time-table, in order to locate a particular train; settling down to work after an hour of social relaxation, copying in ink an exercise previously written with a pencil; participating in a lifeless conversation; searching for a number in the telephone book; making a decision between two possible lines of action, each of which is equally unattractive. The purpose of voluntary attention is therefore to win for ourselves results in attainments or reputation or abilities which are necessary to our present or future well-being. It is apparently the most difficult form of attention to pay because it is the only one of the three forms which requires marked mental effort in order to bring it to pass.

In our next lesson we shall apply all these general facts about attention to the attentive powers and processes of children.

LESSON 35

ATTENTION (*continued*)

What to look for in the observation period:

1. The typical form of attention paid by the children.
2. Whether there is greater evidence of the voluntary type being paid by children in the intermediate grades than in the lower or higher. Why?
3. The ease with which the attention of an individual or of the entire class may be diverted to the most irrelevant consideration.
4. Whether the teacher is needlessly "sugar-coating" education, or whether, on the other hand, she is very wisely and unobtrusively seeing to it that the lesson makes an appeal to the natural interests and instincts of the children.

Characteristics of attention in younger children. The things to which the infant in the first few weeks of its life pays attention are, as we have seen, those persons, things, and processes connected with the taking of food. The movements of the mother in preparing the bottle, for example, invariably rivet the weak attentive powers of the infant, and its eyes follow her about the room unsteadily as she busies herself in getting the bottle ready. Beginning also in this early life of the baby is the attentive attitude toward moving objects. Even though the mother be not concerned with preparing the food of the infant, but chances to be engaged in setting the room in order, or dusting the furniture, etc., the eyes of baby are certain to follow her movements. The same is true of the moving about of any other member of the family, or of a guest. A chair which continues to rock after some one has risen from it is likely to hold the attention of the infant until it ceases to move. A bird's cage swaying lightly in the breeze, or a curtain blowing at the open window, or the swinging pendulum of a clock are stimuli to which the attention response rarely fails to be in evidence. Even checkered sunbeams dancing

Characteristics of the attention of boys and girls. Boyhood and girlhood, as opposed to the period of earlier childhood about which we have just been speaking, represent the age *par excellence* of the operation of the principal instincts, notably play, which may be taken to include such other original responses as the migratory, hunting, gregarious, collecting, and rivalry instincts. And because this period of life is the age in which these fundamental instinctive promptings operate with the least degree of friction, because least modified and sublimated by experience, it follows that the spontaneous or non-voluntary type of attention is the predominating one throughout the period. Children in this age attend to their sports and their amusements and their games and their relaxational activities freely and spontaneously, and for the simple reason that they are interested in such stimuli as their play environment supplies to them without number and without limit. Let us summon up a few examples of play activities of childhood which challenge the free, spontaneous attention of their participants.

This morning I watched a five-year-old boy delving with his shovel in the dirt of the garden. It was not gold nor precious mineral that he was seeking. Rather he was engrossed in the tiny worms and the occasional bits of glass and the numerous small colored stones that his industrious shovel turned up. What prompted him? Curiosity — the thirst after knowledge. Was he intensely interested in his work, or was he merely plying his spade to pass the time away? By no means the latter. He was earnestly and thoughtfully examining every object which met his hand. Even his mother had to speak twice to him before he was fully aware that she had spoken. For somewhat more than an hour he thus labored in the dirt of the garden. His face grew flushed with the exertion, and he paused more than once to regard an incipient blister in his palm. No matter; he kept industriously at work. Spontaneous attention, called forth by his curiosity, prompted him. If you could

only succeed in holding his attention for an hour to his school work a little later, with all the concentration which he manifested this morning, you could probably promote him into the second grade in a week! And yet how unfortunate and unwise it would be to attempt to develop his mind any more rapidly than his frail body could keep pace. Nature after all knows best and tempers her instruction to his strength.

We have referred before to the intentness with which the child builds up his tower of blocks, adding each successive unit to the rest in fear and trembling, as it were. The play instinct compelled his spontaneous attention to the process until the dramatic moment arrived when they toppled over, and thus released his concentrated attentiveness. In play practice for skill, too, this same sort of un-voluntary attending is seen. It is far easier, for example, for a boy to concentrate his every energy upon the practice of a new curve in baseball than it is for him to practice for an equal length of time upon his scales at the piano! In the one case there is an immediate instinctive interest; in the other such interest, if present at all, is rather a remote one attaching itself to a possible future condition of skill at the piano which is still so far away that there is little spontaneity in the attention vouchsafed to it. How easy it is, too, to attend to such instinctive activities as collecting, or exploring, or tunneling, or tracking some prey to his lair! A broken toy, or a snarled fishing-line, or a leaking boat can be more readily attended to than an object which has no direct relationship to play. And how easy it is to attend to an interesting story which is being read! The youthful searcher after adventure and romance as recorded in some thrilling tale is utterly oblivious to the passing panorama of life around him. No doubt you can remember many favorite stories which you used to love in the golden days of childhood, and which you can still recall tolerably accurately, thus bearing witness to the profound attention which you devoted to them at the time.

It should perhaps be stated that, while the spontaneous type of attention is thus seen to be the characteristic type during childhood, the involuntary form is of course called forth on occasion. Whenever stimuli which are in themselves compelling reach the sense organs, they compel attention away even from that play or work which is inherently interesting, and to the unique or intense occurrence or situation. For example, no matter how profound may be a boy's interest in a game or a story, he is not slow to respond when the fire bells sound, or when an airship passes over, or when the automobile skids against the sidewalk. To such situations he turns his attention involuntarily, just as do his older and wiser fellows. For him, as for all of us, however, the involuntary attitude of attending becomes only an incident; his predominating interests lie in situations which are inherently interesting to him.

Voluntary attention in children. Play and happiness are normal conditions of childhood. Spontaneous attention should therefore be the rule. But beginnings have to be made, even in the magic time of childhood, to adjust one's self to the circumstances of adulthood. Hence the elements of voluntary attending need to be founded in children's lives. In some cases, however, too early exercise of the power of forced attention results in distinct injury to the health of the child. Such, for example, would be true of children who are obliged to go to work while still little more than babies. By being compelled to pay attention to work situations in which little or none of the play element enters, very young children thus not only stunt and dwarf their physical growth, but retard and do violence to their mental growth as well. It may chance that you have seen such children, victims of what we term child labor, and victims of the greed of men. Still, such perverting and aborting of childhood and the normal expressive side of childhood are relatively uncommon. For the great mass of children everywhere childhood is enjoyed for childhood's sake, and the toil of the future throws little shadow upon it.

But childhood is the prelude to adulthood; it is the pre-

paratory period for living. Hence, since one of the requisites of adulthood is ability to pay sustained, voluntary attention, the foundation stones of this same ability have to be laid in childhood. Among the many situations in which and from which this ability is slowly evolved belong such activities as learning to dress one's self, and to bathe and care for the hygiene of the body; doing simple tasks about the house, such as washing dishes, and filling the coal-hod and the wood-box; studying and practicing music lessons; learning simple selections to speak or recite; and other activities commonly required of children. Thus, by the time the child has come up to school age he has formed certain elementary attitudes and habits of voluntary attention upon which the teacher may build in the more formal work of the school. And even in the schoolroom, as you have observed, the interest of a child is attracted to a given lesson often by turning it into play, and thus summoning up the more easily given spontaneous attentiveness. Naturally there are certain limits to this "sugar-coating" of education, but the fact remains that one of the best ways to train the voluntary attentiveness of a child is to furnish plenty of attractive material for his spontaneous attending.

Not long since, I watched a group of kindergarten children weeding their somewhat neglected garden. Each child had a tiny plot in which were a few scattered flowers, with now and again a cornstalk. The children were inclined to play with a toad which lived in the damp stone wall beside the garden, and their weeding bade fair to be entirely neglected. But when the wise teacher pointed approvingly to the tiny plot of one of the tiniest girls — which had been surprisingly well weeded by an industrious child who had denied herself the happiness of playing with the toad — immediately there was a general movement on the part of all the other children in the direction of the garden, and before many minutes had passed not a weed was to be seen anywhere. The flowers and the cornstalks were undisputed possessors of the plots. You can understand thus how, by wisely playing upon the instinct of rivalry and perhaps

approbation the teacher succeeded in persuading her spontaneous minded children to attend to a piece of difficult work until they had finished it.

In brief the heart of the child is in his play which he has either just left or else is shortly to resume. You may send him to the store on an errand and ply him with warnings not to forget what he is to get but you need not be surprised if he returns with only a part of the order or with totally different things from what were required. And yet if there were any candy mentioned as a possibility he hardly forgot that! All attempts at voluntary attention are likely to be unpleasant until through interest or the arousal of ultimate desirable ends a non voluntary attentiveness may come in to urge the child forward into ever greater and greater conquests of mind.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Observe an infant in the cradle for ten minutes paying special heed to the things to which he attends during that time.
- 2 Observe a group of children at play on Saturday and note the sort of attention which they appear to be giving to their games.
- 3 Report any illustrations which may come under your notice of voluntary attention paid by a child or a group of children.

THE LESSON APPLIED

- 1 What would be some disadvantages of the voluntary type of attention as the one chiefly appealed to by the work of the school?
- 2 Some teachers of the old school still maintain that a prominent end of education should be the developing in children of ability to pay the strictly voluntary brand of attention regardless of whether any interest inheres in the educational process or not. What is your reaction to this contention? Is there then any positive relationship between interest and effort?
- 3 In how far do you think the successful schoolroom atmosphere inspires children to propose the investigation of interests and questions that are a part of the lessons? When the children feel that they are thus originating their own problems what is the type of attention that they are apt to give in finding the solutions?
- 4 What are some good ways of securing attention? Some poor ways?

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LESSON 36

MENTAL IMAGERY

What to look for in the observation period:

1. Whether the children appear to be getting clear images from their study.
2. In how far the teacher takes special pains to clarify and organize the information which the class is receiving from its study, discussion, and field work, to the end that clear and definite images may be guaranteed.
3. Evidences in support of the statement: "Childhood is the springtime of the imagination."
4. Any evidence that the study of the lives of great men and women of the past is firing the imagination of the children.

Imagery defined. In our discussion of perception we discovered that all our sources of information concerning the outside world are derived through the five senses, and that in a similar way all information which we have concerning internal or muscular reactions within ourselves came about through the kinaesthetic and organic senses. Once such sense impressions have crossed the threshold of consciousness, as we saw, they acquire meaning and are termed perceptions. We referred, for example, to the perceptions of the bottle and the milk and the processes concerned with the taking of food by the infant as arising from seeing those objects and processes. We referred also to certain auditory and olfactory and tactile and gustatory and organic and kinaesthetic perceptions which arose from actually hearing, smelling, touching, tasting, etc. In this lesson we are to be concerned with the results of perceptions. Images may be defined as *the traces left in the nervous system by perceptions and sensations, and which may be revived in the same or in different order as when originally experienced.* Obviously, the nervous system must be so constructed as to be able to retain all the many impressions

which are borne in to it from the end organs and interior of the body. These traces are termed in psychology images, and make up what we term our imagery. Having seen, for instance, the bottle and the milk, and having experienced the satisfaction from drinking the latter, the infant *retains* certain more or less sharp *images* of the whole process of its food preparation and taking. Let us illustrate this power of the nervous system to *image* previous experiences by citing some other common examples.

Illustrations of our imagery. If you were asked to recall to mind the appearance of your own home, you would find little difficulty probably in reinstating the traces left in your mind of your past experiences with the home. No doubt you could draw a plan of the house, indicating every window and doorway and correctly locating every room and hallway within. So with the people who live in it; you can summon up pictures of every one. In such case, your picture is known as a *visual image*. You have visual images of all of your friends and neighbors, your street, the landmarks of the town in which you live, the sunset, the moonlight night, the cloudy sky, and the shimmering lake. In short, there is nothing which you have ever seen and noted which does not continue to remain at your command, ready to be called back at will. So with things which you have heard. You can still "bear" in your mind's ear the melody played at the piano, the shrieking whistle, the puffing of the locomotive, the swish of the waterfall, and the roar of the ocean. You can also "hear" your friend's voice, the barking of the dog next door, and the cheery boiling of the kettle at evening. Such traces of past experience left in the nervous system are known as *auditory images*.

In the case of the skin sense perceptions it is no different. On the side of sensations of cold, you are able to recall how the ice "feels," and the still, frosty, winter evening; on the side of sensations of warmth or hotness, you can easily call up memories of the hot radiator throwing out its heat waves full against your face, or the midsummer sun pour-

speech. From the foregoing classification of all possible forms of imagery you can readily understand the important difference which the term "image" as used in psychology has as compared with its meaning in popular terminology. We say loosely, "John is the image of his father"; or, "my dress is the image of yours." Image in such usage signifies a similarity which is objective. The image of psychology, however, stands for a similarity which is subjective, existing only in the mind of the person possessing it as a more or less exact counterpart of the objective reality which initiated it. Thus, your image of your home exists only in your own mind; it is subjective, standing for a reality which is objective. So with all your other store of mental images.

There is another significant difference between the "image" of psychology and the "image" of everyday speech. According to everyday usage, an image is related to vision, to the sense of sight, whereas in psychological terminology, an image may be related to any one of the seven possible sensations: seeing, hearing, tasting, smelling, touching, feeling organically, and muscular strain. Thus, according to the terminology of psychology it is just as correct to speak of an *auditory*, or a *gustatory*, or an *olfactory*, or a *factual*, or an *organic*, or a *kinesthetic* image as to speak of a *visual* image. All are traces left in memory of original sense perceptions; as to which of the possible end organs of sensation are concerned matters nothing. You should, then, appreciate, at this point in our discussion, that so long as an experience is still present to the senses it is a sensation plus a perception; after it has disappeared from the range of the senses it exists in the mind only as an image.

The value of images. Obviously one's images are far less clear and constant than his perceptions and sensations; memory of an experience cannot compare in vividness and constancy with the vividness and constancy of the actual experience while it was present to the senses. For example, you no doubt find that the image of your home which you

of distress. Obviously, the child retains an image of her and is satisfied only when she returns and he finds the image matched by the reality. Nor will any other mamma answer the description: he cannot be deceived by the most clever dissimulator. Do you recall the illustration cited in a preceding lesson, of Miss Shinn's niece being dumbfounded at beholding the coil of gray hair and the back of a head turn suddenly and miraculously into grandma when grandma turned her head? The explanation of this surprise lay in the fact that the coil of hair as seen from the rear did not match the partially formed image of grandma which the child retained in her mind from having seen grandma only from the front. And you recall that the child's attention was compelled time and again to this new aspect of grandma as seen from behind. What the child was doing was to endeavor to link up the earlier perception with the later into a more definite and accurate image of grandma. As children pass out of infancy their rapidly increasing powers of observation naturally prepare the way for a rapid increase in the number and range of images which they possess. We have said that the child lives in a world of sensation; we may now infer that the child also lives in a world of images which result from the sense perceptions with which he is surrounded.

The springtime of the imagination. Thus does one writer refer to childhood—the springtime of the imagination. Now the imagination is nothing more nor less than the playing with all these images which flood in upon the thirsty, eager mind. If you are at all familiar with the ways and wishes of children you know well that they live indeed in a world of unreality, based always, however, upon one of distinct reality in which they live, move, and have their being. But they seem to extract often from this world of actuality about them such wonderful experiences, such happy imaginings, such quaint ideas and beliefs, such impossible values! If you have ever told a story to a child you must have been struck with the interest which he felt

in your narration, judging from his baited breath and his dreamy, far-away eyes. He was living not in the world in which you were living, but rather in the delightful world of imagination. In the everyday life of children so many new experiences and discoveries plunge in upon their minds that they are fairly surfeited with them. Every story listened to increases these deliciously satisfying images; every picture from *Mother Goose*, every nursery rhyme likewise multiplies them. Every journey into the woods adds to them. For every new situation which arises the child has an explanation of his own to offer, and which quite satisfies him. Out of his heterogeneous store of imagery he is able to throw round every flower and every bush and every tree and every stone a veil of romance and myth which we older folk can but marvel at in wonderment. By the magic of his imagery he imputes life and sense to the inanimate objects which surround him; he peoples the world with giants and pygmies, according to the mood of the moment; he communes with the flowers and the birds and the trees and the stones as with real playmates of the flesh; in his happy play a line of chairs can be converted at will into a train of cars, or a friendly dog into a savage bear, or a dry-goods box into a house on a city street! From his lowly blocks he builds up columns and towers and churches and temples that rear aloft to dizzying heights into the sky.

Children's ideals and ambitions. Probably at some time you desired more than everything else in the world to be like some one whom you chanced to know and admire. It may have been your own mother, or father, or aunt, or uncle. Or it may have been an older playmate, or a teacher. But like some one you certainly dreamed of being. Hardly a child passes up through the period of later childhood without experiencing this longing to be like some one who is particularly admired. Every one must have an ideal; it is a sort of hero-worship which entralls most of us at some time or other during the magic age of childhood. Many of us never outgrow this longing of our childish hearts, and con-

tinue through life especially loving and looking up to some character of history or literature as our ideal. Usually, however, the age of hero-worship passes away and leaves us poorer perhaps than before.

So with the ambitions of childhood. What boy does not long to be a locomotive engineer when he grows up? It is hard for many a boy at the tender age of nine or ten to imagine a future in which he does not guide some mighty leviathan of the rails through gorges and under mountains and across plains with a touch of his hand! And where is the girl who does not long to be a teacher, or a milliner, or a dressmaker, or perhaps an actress? Fortunately, perhaps, our ambitions of childhood rarely come to fruition in maturity. Were it not so perhaps we should have none in our land in the next generation save trainmen and policemen and milliners and teachers and perhaps actresses! The influence of the passing years and the new interests which are bound to come with newer and ever newer experience serve to wean us from the magic spell of childhood's ambitions, and open up before us a new heaven and a new earth, the future.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Bring to class a list of five different images which you have
2. Tell some story to a child and report upon his reactions to it. If possible note over a period of several days whether he still retains the story in memory and is playing with the imagery which it suggested to him.
3. Had you an ideal in childhood? Do you still retain it?
4. Had you some definite ambition in childhood? What is your present attitude toward it?
5. Look up the matter of children's lies. Why do they tell untruths? Can you furnish instances that have come under your own observation?

THE LESSON APPLIED

1. If the images which children are to harbor as a result of their study of the school subjects are to be clear and accurate, what must be true continually of their sense training and their perceptions? Illustrate

2. The predominating type of imagery in most of us is the visual. This does not mean that in the training of children the strengthening of other types is to be neglected. Are there evidences in the children under observation that the visual is the predominating type among them? What efforts are being put forth by the teacher to establish dependable auditory and motor images?

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1. Angell, J. R. *Psychology*, chap. 8
2. Betts, G. H. *The Mind and its Education*, chap. 8
3. Kirkpatrick, E. A. *Studies in Psychology*, chap. 3.

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LESSON 37

MEMORY AND IMAGINATION

What to look for in the observation period:

1. The eagerness with which children supply, to the topic under discussion, either slightly related or wholly unrelated experiences which they have themselves had.
2. Evidences of the desultory, or "scrappy" nature of children's memory, especially of those in the lower grades.
3. Whether a high degree of interest is attending the children's learning.
4. In how far the teacher is endeavoring to see to it that the children are properly organizing and linking up their memory material, i.e., are constructing from the desultory memory of childhood the foundations of a dependable logical memory of maturity.

Memory and imagination. In the previous lesson we found that every sense perception experienced by an individual leaves traces, or images, in the nervous system of that individual. We found that there were visual, and auditory, and tactal, and olfactory, and gustatory, and organic, and kinesthetic images, thus making up the sum total of one's imagery. Imagination we define as merely the ability to reinstate these images, regardless of whether they are revived in the same order or form in which they were originally presented or not. For example, we discovered that a child's imagination leads him to work over and intertwine various of his images into totally new combinations. Thus, a story told to him he proceeds at once to take remarkable liberties with in his imaginings. Jack the Giant-Killer may be in the child's imagination anything but the character which you ascribed to him when you told the story; so much so, indeed, that perhaps you will be quite at a loss to recognize in the Jack of the child's play and questioning and dramatizing the Jack of the story. In other words, the higher nervous system is of such an integrating

tion may be said to be passive; in the former, active. In either case it is *productive*, i.e., it takes groups of images from innumerable experiences and combines them into a new *product*.

Memory, however, may be defined as *reproductive imagination*. It is the *ability of the mind to reinstate past experiences as they occurred, i.e., in the same order and form, and to recognize them as definite past experiences*. For example, your image of your own home, which you are able to call up at will, you recognize definitely as a true experience. So with your other images which are associated more or less changelessly and constantly with definite experiences of the past. Herein lies the great difference between imagination and memory — the former may or may not be composed of exact images of definite past experience, the latter must be, and it must be recognized as a faithful reproduction of such experience. And because memory consists of the ability to reinstate and recognize past images or perceptions, it is properly classed as reproductive imagination. You can appreciate for yourself the value of *recognition* as an element in the memory process by considering the mental confusion and helplessness which would result were a child unable to recognize that $7 \times 9 = 63$, etc. If he were not *sure* of himself his memory would be of little use to him.

We are now in a position with respect to memory and imagination to make the following classification of imagery:

Imagination:

(a) Reproductive imagination.

(1) Memory.

(b) Productive imagination.

(1) Active

Inventions, artistic creations, etc.

(2) Passive.

Day-dreams, reveries, etc.

It is evident from this classification, and from the preceding discussions, that imagination is a term which in-

cludes all memorial processes, and that, psychologically speaking, memory is a sub-division of imagination. The term "imagination" has, as its root meaning, "image," and for this reason comprises properly all types of mental response based upon images. Both the actual memory process and the more generic imaginative activities are, as we have pointed out, based upon images. In what sense is the term "imagination" likely to be used in popular phraseology? Witness the far broader psychological significance of the term.

Earliest memories of childhood. If you will think back into your own childhood in an endeavor to discover what memories stand out as being the most lasting in your early experience, it is not unlikely that you will find among the brightest and most vivid impressions still retained memories of some birthday celebration, or some Christmas tide, or some trip away from home, or perhaps the first day passed in school. It may be, on the other hand, that instead of these more pleasant memories you find other and less pleasant experiences, such for example, as the time when you lay ill in bed for a month with one of the numerous so-called "children's diseases," or the occasion of some death in your family, or some severe punishment which you were compelled to suffer, or perhaps when you passed through some trying experience in which you were very much afraid. In other words, it appears that those memories which remain with us longest are those which are tinged with a high degree of emotion, such as joy or sorrow. Such experiences one never forgets, and the pleasant ones return with overwhelming force on occasion to take us back to the merry, care-free days of childhood.

This very persistence of memories associated with strong emotion furnishes us a strong clue to the memorial capacities of children. As a rule they are intensely interested in events from which they derive pleasure and happiness. Sometimes they are compelled to pay attention to things and happenings from which they derive rather pain or un-

happiness than the reverse. In either event it is the vivid experience which makes the lasting impression; it is the vivid impression which remains longest in memory. Those experiences which, on the other hand, make little impress upon the senses and summon up few associations in the mind are the ones which fade first. Activities accompanied by a high degree of interest or attention make for lasting and permanent memories, because they force upon the recording nervous system clearer and sharper images.

Who of us, for example, cannot recall the favorite nook or cranny wherein we were wont to seek solitude or quiet in childhood? And who of us does not remember yet the *Mother Goose* and the nursery rhymes of childhood? Who does not recall the favorite games, the well-loved haunts, the happiest hours lived, the caves and hillsides and forests explored? Golden memories of mature years are usually the survival of vivid experiences in childhood and youth.

Desultory memory of childhood. We adults possess as a rule a somewhat interrelated memory, wherein each experience is more or less closely related to each other experience of like nature. For example, all our several experiences with the works of Dickens or with the process of manufacturing rubber goods are a sort of unit in the mind, closely associated and logically connected. In children, however, the case is quite different. The typical memory of childhood is what we may term a "desultory" memory; i.e., it comprises a great number of somewhat isolated facts which it has gleaned from an exceedingly many-sided range of activity. Each one of these unrelated memories appears to be held indefinitely in the mind of a child, almost without connection with any other relevant experiences. You may be surprised some day, for instance, to have a child to whom you have told a story some time before ply you with questions as to the character or characters, about whom you yourself have in the meantime no doubt forgotten. It seems that a child never forgets any experience which he has had. You or I forget very quickly those ex-

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Tell a story to a child in which there is considerable imaginativeness, and note the interest which he manifests in it. If possible, report upon his reaction to the story, i.e., does he appear to be turning over in his mind the images which he has gained from the story, and does he question you further concerning it?
- 2 Give illustrations of active and passive imagination.
- 3 Determine if possible the kind of stories which children of five or six years of age appear to like best. Can you tell why?
- 4 Recall your earliest memories of childhood. Are they explainable on the grounds mentioned in the lesson?
- 5 Cite any illustrations which you may be able of the desultory nature of children's memories.

THE LESSON APPLIED

- 1 In what ways are habit and memory related? Illustrate concretely.
- 2 Contrast the values of strictly "memory" work with the kind of work requiring independent thinking on the part of the pupils.
- 3 "It is the vivid experience which makes the lasting impression." What responsibility does this statement place upon the teacher and the teacher's methods?
- 4 To what extent should the work of the school train the productive or creative imagination, as distinct from the strictly reproductive? Illustrate.

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- 1 Angell, J. R. *Psychology*, chap. 9.
- 2 Betts, G. H. *The Mind and its Education*, chap. 11.
- 3 James, Wm. *Psychology*, chap. 13.
- 4 Kirkpatrick, E. A. *Studies in Psychology*, chap. 2.
- 5 —— *Imagination and its Place in Education*, chaps. 5 and 15.
- 6 McMurry, F. M. *How to Study*, etc., chap. 7.

LESSON 38

THINKING

What to look for in the observation period.

1. Whether the children are permitted and expected to think for themselves. In what ways does the teacher strive to aid and encourage them in independent thinking?
2. Evidences of the naïveté of children's reasoning
3. Individual differences in the ability to think and reason
4. Whether children in the lowest grades do any real thinking, i.e., is thinking ability something that appears suddenly in a higher grade, or does it represent a growth from the earliest beginnings in the pre-school life of the child?

The concept. In our lesson on perception we saw that whenever sensations acquire meaning in our minds as the result of past experience they cease to be sensations primarily and become perceptions. We used as one of the illustrations of a perception the child's increasing experience with the cat. It sees the cat walking about, it perhaps hears its mewing, it touches and strokes its back, and may even be scratched by its claws — all of which sense impressions are transferred to the perceptive powers of the child and go to make up his knowledge about that particular cat. Henceforth the child has a definite perception of the cat and recognizes it whenever it chances to pass. He likewise possesses a rather distinct visual image of the cat which enables him to call up a mental picture of it when it is not present.

But so far the child has not learned anything about cats in general. To him there is only one cat in the world — Tabby. Let a dog chance to pass within range of the child's vision; immediately he thinks *Tabby*, or *his cat*. On closer inspection, however, he notes certain differences between the dog and his image of cat. In his mind at present, if he could formulate his notion of a cat into words, a cat is something that walks, may be either large or small, of one color

or of another, and possessed of two possible languages. As experience succeeds experience, however, and as he sees other and yet other cats and other and yet other dogs, his notions about both begin to be somewhat clarified, until finally he arrives at a tolerably accurate notion of what a cat is as contrasted with what a dog is. He discovers, for instance, that not all cats are alike, there is a difference between *the cat* and a *cat*. A *cat*, he finds out, is a four-legged animal, with a mew, with sharp claws, much smaller than a dog, with finer fur, and of somewhat different habits. In a similar way, a dog is ultimately discovered to be an animal with four legs, with a bark, possessing coarser fur, and is considerably larger than the cat. Somewhat later he may learn that there are certain species of dogs, however, which are no larger than cats, and whose fur is quite as fine. The notion of *dog* is therefore narrowed down to a four-legged animal of certain well-known habits, and possessed of a bark. When this process has been completed, we term the resulting notion in the child's mind a *concept*. A concept is then, apparently, built up of many individual experiences, or percepts, the images of which are finally fused in the mind into a *general notion*. We may define a concept as a *general name for a class of related objects*. It is only after many experiences with individuals that their common qualities, or resemblances, may be extracted and combined into general ideas, or concepts. It does not matter whether the individual objects be cats, or dogs, or houses, or carts, or trees, or flowers, or children. It does not even matter whether they be abstractions such as a kindly act, or a traitorous deed, or a false statement, or patriotism, or truth, or honor, or love, etc. one's *conception* of all such objects or abstractions as these depends upon experience, or perception, of a great number of individual instances in which either the objects have been observed or the abstractions exemplified. One's conception of truth, for example, is based and built upon the number of times in which one has seen a truthful act done, or has read or heard about it.

One other illustration of how the child builds up his concepts will be sufficient to show the importance of experience with individual objects in the life and mental development of the child. Take the growth of the concept of table. In the nursery perhaps there is a small round four-legged table, stained dark brown. So far as the child's observation goes, a table is this particular table; the world holds for him at this point no others. But when he is carried into the next room, behold! a quite different table, large, stained a yellowish shade, and perhaps possessing five or more legs. As the child grows stronger and penetrates into other rooms he beholds other and yet other tables, and as he enters other homes he discovers that perhaps no two tables are alike. And yet he is not confused greatly. Even though there are round tables and square tables and oval tables and three-legged and four-legged and five- and six- and eight-legged tables, and yellow and green and black and brown and natural finish tables, etc., a *table* is soon discovered to be a piece of furniture possessing legs and designed to place things upon. Here is his concept, and to it he may refer all new tables met in the future, without bothering to register a definite memory image of every one encountered. We said in the last lesson that one of the characteristics of a child's memory is its desultory nature: an image here and an image there and an idea here and an idea there, apparently without any connectedness or order. But it is these individual and isolated images which are the nuclei about which all subsequent perceptions of related objects or principles cluster. We said also that the characteristic of the vigorous adult memory is its logical and ordered arrangements of memory images. You can now appreciate that after all this well-ordered, adult memory is merely the child's desultory "here-and-there" memory developed and supplemented by hundreds of new experiences. In other words, adults have more accurate and filled out concepts, while children have only the skeletons upon which later concepts are built.

The child is in the *perceptive* stage; the adult is in the *conceptive* age.

But now what has all this to do with thinking? A great deal, because thinking is, after all, impossible and useless unless one has clear and definite concepts and ideas. How, for example, can you think and think intelligently about whether a man is just to his neighbor unless you have definite concepts of what constitutes justice? Or how can you determine what punishment to mete out upon a child unless you have some fitting notion of what constitutes an offense? As teachers, as citizens, as neighbors, as advisers and guardians of childhood, we all have abundant need of clear conceptions of some of the fundamental relationships between individuals and groups and nations and principalities. I shall cite but a single illustration to demonstrate the need of accurate concepts in order to think clearly. That illustration will be the conception of what constitutes good citizenship.

As these lines are being written we are living in the midst of alarming uncertainties. Strikes are multiplying throughout the country. Boston, the city of culture, the Athens of America, is convulsed in the throes of one of them. Thievery and robbery and larceny and outrage are being committed in her erstwhile law-abiding streets. Over the whole country there looms the threatened strike of all manner of laborers in a general walk-out to coerce the capitalists and financiers to either hand over all management of industry to the laborer, or else to vouchsafe to him a considerable part of it. And this in the midst of the twentieth century, when the greatest war that has ever rent the earth and the men of earth is hardly yet ended. Never before in the history of human kind has there been such great need of ability to *think* as there is to-day. But who is able to? Who has trained in himself such ideals of good citizenship, for example, as to be eager and willing to admit that there is justice in the contentions of both parties to the nation-wide disputes? Who knows what justice is? Who is able

to *think*? Obviously every disputant knows his side of the controversies; but who is broad-minded enough to consider the other side? Who knows what broad-mindedness is?

What the world needs to-day is finer conceptions of citizenship, broader notions of man's own responsibilities and duties, nicer conceptions of justice, fairness, even magnanimity. It was a relatively easy matter to arrive at definite *conceptions of the ideals of a treacherous enemy country*: it is a much harder thing to form conceptions of abstract qualities and principles, upon our national ideals of which must be dependent the outcome of the present labor difficulties. And so with the controversy over the Society of Nations. How few of us there are, after all, who are sufficiently intelligent in the matter of fair play and justice and peace between nations to have even an opinion! And yet everybody *has* one. Where is that broad-mindedness, based upon clear thinking and nice conceptions, which can dissipate the befogged conditions of so many of our minds and aid us in thinking this and all other perplexing questions through to an inevitable conclusion?

Thinking a process of analysis. Thinking implies a problem. No one would ever think who encountered no problems in his life. But once the problem presents itself, how shall it be attacked? Obviously by summoning to one's aid all possibly relevant factors bearing upon it, by selecting those which are possible explanations, and then by applying the proper ones to the problem at hand. Here is a quotation from Professor Dewey's book *How We Think* which illustrates excellently the process of thinking out a problem:

Projecting nearly horizontally from the upper deck of the ferry-boat on which I daily cross the river is a long, white pole, bearing a gilded ball at its tip. It suggested a flagpole when I first saw it: its color, shape and gilded ball agreed with this idea, and these reasons seemed to justify me in this belief. But soon difficulties presented themselves. The pole was nearly horizontal, an un-

usual position for a flagpole; in the next place, there was no pulley, ring, or cord by which to attach a flag, finally, there were elsewhere two vertical staffs from which flags were occasionally flown. It seemed probable that the pole was not there for flag-flying.

I then tried to imagine all possible purposes for such a pole, and consider for which of these it was best suited (a) possibly it was an ornament. But as all the ferry boats, and even the tug boats, carried like poles, this hypothesis was rejected (b) Possibly it was the terminal of a wireless telegraph. But the same considerations made this improbable. Besides, the more natural place for such a terminal would be the highest part of the boat on top of the pilot house. (c) Its purpose might be to point out the direction in which the boat is moving.

In support of this conclusion, I discovered that the pole was lower than the pilot house, so that the steersman could easily see it. Moreover, the tip was enough higher than the base so that, from the pilot's position, it must appear to project far out in front of the boat. Moreover, the pilot being near the front of the boat, he would need some such guide as to its direction. Tugboats would also need poles for such a purpose. This hypothesis was so much more probable than the others that I accepted it. I formed the conclusion that the pole was set up for the purpose of showing the pilot the direction in which the boat pointed, to enable him to steer correctly.

The above is an excellent illustration of the thinking out of a problem. The narrator of the experience, having become interested to solve the mystery, proceeded to summon up all possible explanations which were in any way relevant; then, one by one eliminated all but the one which fitted the case. None of the possible explanations tallied with his conceptions of ornaments-for-a-boat, or wireless-telegraph-terminals, or any other purpose save the final hypothesis.

Inductive and deductive thinking. Inductive thinking consists in amassing large numbers of individual perceptions until the point is reached where it appears safe to draw a conclusion. Thus, if a child discovers that every sentence in the newspapers and the magazines and the books begins with a capital letter, he is justified in concluding that

which he did not know before; namely, all iron is heavy. In future experiences with iron he will refer the situation to his general principle, thus not only interpreting it in light of the principle but inductively strengthening the deductive principle involved. In our actual thinking, then, there is no particular difference between the two forms of reasoning; each is needed to supplement and strengthen the other.

Children's reasoning. We have stated and reiterated the fact that the child lives in a world of perception, a world of new experiences and new images. It is not surprising therefore that the reasoning power or the thinking power of children should be somewhat confused and illogical. The child's ideas of time and space are vague, his concepts of most objects and all abstractions are wholly inadequate for several years. He moves in a world of giants and ogres and demi-gods, of myth and saga and romance, in which clear and positive knowledge develops rather tardily, and we encourage this tardiness by delighting ourselves to keep the child in this delicious age as long as possible: we love his impracticality and defer purposely the time when he shall be a practical thinker and logician. On the other hand, you have certainly observed the working of children's thought on occasions which made you marvel at his astuteness, or wit, or quickness and keenness of comprehension. Occasionally a child manifests a mental perspicacity quite beyond his years in his clarity of interpretation or inference. In the following paragraph are several illustrations of children's thinking. They are selected from Brown's study (3) of the thoughts and reasonings of children:

A child five or six years of age, after having visited with her father a mill in which some rather noisy machinery was in operation, came to the conclusion that up in the sky there must be a lot of machinery which God puts in motion whenever He wants thunder. A four-year-old boy desired to be permitted to go out in the rain because it would make him grow. A five-year-old girl exclaimed, on seeing a crooked tree. "Oh, see that tree sitting down!" Another five-year-old reasoned that because a person's eyes were gray she was getting old. A seven-year-old boy concluded that

toads have rheumatism because they hop. A five year-old boy, upon seeing an electric light being set up in front of his home informed his mother that God would not have to make the moon any more. A six year-old girl reasoned that when God wanted rain He pulled a string like the string on the shower bath in her home. A seven year-old on being asked in the morning by his aunt whom he was visiting whether he had said his prayers the night before replied that he had not. His aunt warned him that he must always do so or else God would not take care of him. The child replied 'Well he did.' A four year-old girl saw some plaster dogs in a store and asked if they were alive. On being told that they were not the child replied 'But they are standing on their feet.'

You can very likely add to these illustrations of children's thinking and reasoning powers scores of other incidents which you have observed for yourself. Remember that in his feverish attempt to increase and clarify his knowledge every child thinks however rudimentary may be his thinking. Slowly he is adding experience after experience to his previous store, and thus slowly building up systems of concepts and bodies of related facts and ideas and principles which will later represent his basis for added study and thought.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Discuss the development of the child's concept of chair or house of obedience.
- 2 On the basis of the illustrations of children's reasonings mentioned above determine whether inductive or deductive reasoning is the natural form of reasoning which the child employs. Can you explain why this should be so?
- 3 Enumerate six reasons why children reason so falsely or so naively.
- 4 Be on the watch for any illustrations of reasoning which children do. Report any instances in class.

THE LESSON APPLIED

- 1 In what definite ways does the socialized school foster the development in the pupils' minds of dependable concepts of good citizenship?
2. Determine the probable pedagogical value of the teacher's repeated admonition to 'Think' or 'Think hard'.

- 3 Is the ordinary school guilty of failure to stimulate to the uttermost the thinking powers of children? Is there any considerable likelihood among teachers that the children's thinking will be done for them?
- 4 Which of the reasoning methods is best adapted to the teaching of lower grades? Of intermediate grades? Of higher grades?

SELECTED REFERENCES

- 1 Angell, J. R. *Psychology* chaps 11 and 12
- 2 Betts, G. H. *The Mind and its Education* chap 12
- 3 Brown, H. W. "Thoughts and Reasonings of Children", in *Pedagogical Seminary* vol 2, pp 358-96
- 4 Dewey, J. *How We Think*
- 5 Kirkpatrick, E. A. *Studies in Psychology*, chap 5
- 6 Tanner, A. E. *The Child*, chap 8

LESSON 39

WILL AND MORAL DEVELOPMENT

What to look for in the observation period

- 1 (In the lowest grades) Evidences of the absence of any real appreciation of morality (In the other grades) Evidences of dawning morality and a moral code in the children as individuals
- 2 Any case in which the childrean's behavior would seem to indicate very slight, if any, notions of what constitutes right and wrong
- 3 In how far it appears to be one of the aims of the school to inculcate in the minds of the children ideals of conduct and regard for justice and right

What is the moral condition of the child at birth? Cotton Mather, the eminent Puritan divine, appealed thus warningly to the boys and girls of his day and generation "Ah, children, be afraid of going prayerless to bed lest the devil be your bedfellow Be afraid of playing on the Lord's Day lest the devil be your playfellow Be afraid of telling lies or speaking wickedly lest that evil tongue be tormented in the flames when a drop of water to cool the tongue will be roared for"

The attitude which this appeal of Cotton Mather reflected was the attitude generally held regarding the nature of children a few generations ago in Massachusetts It was based upon the so-called "doctrine of human depravity" or of "original sin," which averred that every child was essentially an immoral being whose only hope of salvation lay in a strict diet of the Catechism and the Scriptures Jonathan Edwards referred to children as "young vipers" while Cotton Mather, in another place, refers to them as "children of wrath" Even the schoolbooks of the time contained little else than a continual harping upon the original depravity of boys and girls Thus, the last selection in the

old *New England Primer* was a dialogue between Christ, a youth, and the devil. The youth resolves to spend his time in sport and play and to disobey his parents, to the great delight of the devil. Christ tries to persuade the youth to change his mind, assuring him that the devil lies and that his ways are deceiving. As the youth is reticent, Christ affirms that he will be burned in hell. In reply the youth suggests that he knows that Christ has mercy, that it will be easy to repent when he is old, and that all his sport and play will speedily come to an end. The youth laments and begs for mercy, but Christ replies

No pity on thee can I show
Thou hast thy God offended so,
Thy soul and body I'll divide,
Thy body in the grave I'll hide
And thy dear soul in Hell must lie
With devils to eternity

And this is the sort of cheerful, positive instruction to which boys and girls were a few years ago subjected! An appeal to fear, rather than an appeal to more positive motives to be good. Still, who shall say that the stern virtue and strict morality of the early founders of our country, which were the logical outgrowths of such instruction, were not the surest and most abiding heritage which they have handed down to us?

The viewpoint of the time was that the moral nature of every child born into the world was actually vicious and inherently bad. Hence all the energy of which the school masters and school dames were capable was directed toward redeeming them from sure and inevitable wrong and future suffering.

Somewhat more recently another viewpoint of infantile moral nature has grown up. Stimulated by the poets, notably Wordsworth and Rousseau, and by such novelists as Charles Dickens, many people have embraced the opposite conceptions of original child nature. We may apply to this theory the doctrine of original perfection, which states that

the child at birth is essentially *moral*, virtuous, and good. The infant is, as Dickens says, so charmingly "fresh from the hand of God," and hence perfect in morality.

As a matter of fact, it is rather true that neither of these doctrines is correct. The infant at birth is neither moral nor immoral, but rather *unmoral*, neutral — neither the one nor the other. It is like a perfectly balanced scale, however, ready to tip in either direction according to the influences which are brought to bear upon the one side or the other. Whatever of good or virtuous or positive that it absorbs from its environment and early training will tend to make for morality; and, conversely, whatever of bad or vicious or negative its environment suggests will make for the opposite condition, immorality. In other words, the infant's moral nature, like its mental, is a sort of *tabula rasa*, as Locke suggests, a blank page upon which the records cannot begin until the child itself begins them by experiencing and reacting to its experiences.

The hearing of heredity. And yet we cannot assert that "all men are created equal," in a literal sense, for that would imply that every infant has the same innate tendencies toward morality that every other infant has. Such an assertion fails to take into account the influence of heredity upon future moral behavior. You have observed time and again among your acquaintances the insidious immoralities of the parentage dropping out in the children; just as you have also observed time and again the positive moral reactions of the parentage tending to appear in the children. In the next lesson we shall see how tremendous is the power of heredity in the matter of juvenile criminology and delinquency. It should be remembered, on the other hand, that it is extremely difficult to ascribe exact responsibility for the behavior of a child to heredity, for that would be leaving out of account the power of environment, which, as we have seen earlier, is very great. Perhaps the most satisfactory statement that we can make is that, owing to rather wide differences in the heredity of children from a

moral viewpoint, it is easier for one to tend toward moral behavior, and for another to tend away from it

What constitutes a moral code? But the chief determinant of a moral code of a boy or girl is the habitual reaction which they make to their training and environment. One's moral code is, therefore, leaving out the matter of heredity, built up upon the ease with which one's environment can be manipulated to make possible improper moral responses (or the strictness with which it points to inevitable moral responses), upon the habits which are thus favored, and upon the consequent weakness or strength of the will. We may think of the first of these three factors, the ease or strictness of environment, as the *social basis* of morality. On the one hand if there is little parental oversight of the play and amusements and *extra* home and school activities of the child, or if in consequence of that negligence of the home, it is easy for the child to drift into bad associates, or if within the home itself there is in evidence bad or improper influences, such as disputes between father and mother, deceitfulness on the part of either, vicious or improper conversation or acts done before the child, etc., the social basis points inevitably toward the opposite of morality. On the other hand, if there is a wise oversight on the part of the home of the activities of the child, to the end that associates are wisely chosen and the home influences and *extra* school activities are positive and constructive in nature, the social basis makes just as inevitably for morality.

In the second place, the habits which are formed in childhood are very significant factors in the building up of the child's moral code. We have already noted in earlier discussions that most of the habitual responses of children are but modifications or sublimations or redirections of the fundamental instincts. Among the more important of these instincts which make for morality may be mentioned ownership, curiosity, the migratory response, teasing and bullying, and imitation. If any one of these is allowed to "run riot," without proper training into wise habitual

is good and virtuous in the life of a boy who responds abnormally to it. Teasing and bullying tendencies, if abnormally encouraged, may result in a hardening of all finer emotions and a stifling of all sympathy and feeling for others in a child, which may easily be favorable to the perpetration of all manner of crime. And so, too, the imitative impulse, whether reflex or acquired. Especially the studied imitation is fraught with dangers. Children do what others do. They do what they hear or learn of others doing. Witness, by way of illustration, the uncensored moving picture of the more sensational sort, in which safe-blowing and theft and personal violence and underworld ways and a score of other equally vicious examples are displayed before the staring eyes and the hustling minds and restless bodies of boys and girls. And then there is the "burlesque" show and its lurid posters outside to attract the curious eyes of children to the undress and often indecent attitudes of the actors within, all of which cannot but excite the sexual and imitative tendencies which may become firebrands in the hands of immature and curious boys. We may repeat, then, what we said above; namely, one of the chief determiners of a child's moral code are the habits, or the *redirected instincts*, which he forms naturally and inevitably from the environmental forces playing upon him.

Growth of will power. Growing out of the habits which a child forms is the third element in his moral code—his *will power*. A child does not live long surrounded by all manner of environmental influences before he begins consciously to pay attention to many of them, and voluntarily choose as to what this or that response shall be. When he has reached this stage his will is beginning to be a factor in determining his moral code. In pretty nearly every response which mortals are called upon to make there is a right and a wrong. When the child is able to appreciate this niceness between possible responses to a given situation he is no longer a creature of circumstance, but a creature

ence and example will discover to its sorrow later on that an irreparable injury has been done. Right or wrong during the period of early childhood is largely, as Waddle suggests, what is permitted or forbidden. The will which rules the child's action is not his own, but his father's and his mother's and that of his brothers and sisters. Beyond this his own actions seldom extend.

(c) *Later childhood.* Waddle speaks of this third stage in the evolution of the child's moral nature as a sort of transition between the earlier period of doing what one is told and the subsequent one of doing what one himself feels to be right. It is an age of "verbal morality" wherein children can very glibly cover up their actual motives and feelings with a semblance of genuine morality. There are certain things which the child now habitually does because he feels them to be right, or avoids doing because he feels them to be wrong, such, for example, as being polite in the presence of guests, or the inhibiting of the same amount of close intimacy between the sexes as distinct from the earlier thoughtlessness in this respect. And yet, there is no real standard of morality in this period. The same child will tell an untruth to another child or to some one whom he chances not to like, who would not think of deceiving his own mother. His moral values are relative rather than absolute. He has not yet reached the stage where he can appreciate truth and virtue for truth's and virtue's sakes.

(d) *Adolescence.* Now comes the dawning of the real moral self and of the personal values of ethical relationships. It is the very important period of life in which the instincts, not yet entirely in the control of wise and proper habits, and the dawning conscience, wage out an often bitter warfare with one another, with the result that either the one or the other wins. It is the one period of life above all others in which the gravest dangers to the future moral code of the individual lurk. Inasmuch, however, as we are shortly to devote an entire lesson to a study of this period, we shall not discuss it further here.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Go hastily through a copy of the old *New England Primer*, or some other early textbook for young children, and note the emphasis which is placed upon the doctrine of human depravity. Also, see if you can find in Wordsworth any poem which stresses the original perfection of children.
- 2 Do you know personally of any cases in which the moral nature of a child has been unfavorably influenced by the social environment in which he lived?

THE LESSON APPLIED

- 1 Do you believe that we should introduce into our schools definite moral instruction, or is it your opinion that incidental or indirect instruction of this sort should be sufficient?
- 2 Is there necessarily any relationship between moral instruction and religious instruction? Ought there to be religious instruction in the public schools?
- 3 The instincts of ownership, curiosity, and the *Wanderlust* are among those inborn tendencies which are more commonly uncontrolled in childhood, and hence lead often to great moral danger. Should the school make special effort to provide normal satisfaction for these instincts? In what ways might this be possible?

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- 1 Angell, J. R. *Psychology* chaps 20, 21, and 22
- 2 Betts, G. H. *The Mind and its Education*, chap. 17
- 3 Kirkpatrick, E. A. *Studies in Psychology*, chap. 8
- 4 —— *Imagination and its Place in Education*, chap. 14
- 5 Waddle, C. W. *Introduction to Child Psychology*, chap. 9

LESSON 40

THE JUVENILE DELINQUENT

What juvenile delinquency is. You have doubtless very frequently seen in the daily press accounts of boys, and sometimes of girls, whose actions have been such as to bring them into the disfavor of society. Petty theft, injury to property, rowdyism, and the depredations of badly constituted gangs are among the activities which are perhaps most frequently entered upon by the delinquent. For the adult who had offended society and broken its laws in such ways as these ordinarily a prison sentence would be pronounced, and he would be considered a criminal by his fellows. When, however, the existing laws and customs are broken by a younger person, i.e., a person who is, in most states, under sixteen years of age, the term "juvenile delinquent" is applied to him. "Juvenile" because he (or she) is still a youth; "delinquent" because such an offender has literally been "left behind" in his moral development. Whereas other boys and girls have passed through childhood and into youth without actually trespassing seriously upon any law, the juvenile delinquent has failed to do so, with the result that his moral nature has suffered, and he has been "left behind" in his normal evolution by his more conforming fellows.

Until somewhat recently, however, even the youthful law-breaker was looked upon as a criminal and so treated by society. He was ordinarily placed under restraint in an institution, and thus segregated from the group in order that his contaminating influence might not be exercised upon other children. The results of such a system of discipline obviously failed to be very salutary upon the moral development of the youth so placed under restraint, for he was not necessarily in contact with other law-break-

will be the logical sequel. Swift contends rightly that "a period of savagery and semi-criminality is normal for all healthy boys," the only reason that not all boys continue therein being due to differences of environment, the child of the vicious environment tending to be vicious, while the child of the healthy environment tends away from it. Jane Addams refers to juvenile delinquency as "instincts gone wrong"; i.e., because the normal instincts of play and self-activity, etc., find no opportunity for normal expression, they seek it in abnormal and therefore usually vicious ways.

Miss Addams quotes the following list of charges, as they appeared in order in the Juvenile Court of Chicago:

1. Building fires along the railroad tracks.
2. Flagging trains.
3. Throwing stones at moving trains.
4. Shooting at the actors in the Olympic Theater with sling-shots.
5. Breaking signal lights on the railroad.
6. Stealing oil barrels from the railroad to make a fire.
7. Taking waste from an axle-box and burning it upon the tracks.
8. Turning the switch and running the street car off the track.
9. Staying away from homes to sleep in barns.
10. Setting fire to a barn to see the fire engines come up the street.
11. Knocking down signs.
12. Cutting a Western Union cable.

Surely nothing here save "instincts gone wrong"! The instincts of general physical activity, of play, of migration, of curiosity, etc., failed in the case of those delinquents to have normal, happy expression, hence they took the vicious route to find satisfaction for themselves. It is hard to see how a child who had had opportunities for normal play could have cared to commit the acts here enumerated. Give the city child his playground and see the beneficial results in the law-abidingness of the boys and girls!

The defective delinquent. The term "defective delinquent" is applied to those juvenile law-breakers who are

mentally defective. Exactly what part feeble-mindedness or mental abnormality plays in crime we do not yet know. A considerable number of studies of the defective delinquent and the defective adult criminal have been reported, however, all of them indicating a marked correlation between the mental condition and the moral coadition of any given person. Goddard states that mental defectiveness is hereditary in sixty-five to seventy-five percent of the cases; other investigators incline toward much the same opinion. The feeble-minded child is lacking in ability to foresee the results of his deeds either to society, to the person injured, or to himself. His moral judgment is almost nil, and very often entirely so. In him the lower instincts are of full strength, without the inhibitions existing whereby to set back fires to them, so that to *desire* means usually to *carry out*, and some of the most heinous of all crimes committed are those perpetrated by idiots and imbeciles utterly without moral sense. In many instances nowadays the State refuses to take the life of a criminal who has committed murder if it can be established that the evil-doer was morally and mentally incompetent to judge of the enormity of his crime, or perhaps indeed to view it as a crime while contemplating it. Recent studies show insanity and epilepsy in the parents to be heritable, and that they result often in delinquency of the children of such parentage. Alcoholism and abnormal sexual tendencies may also predispose to delinquency.

Modern methods of dealing with delinquents. We stated above that the older attitude toward the youthful offender did not differ materially from that toward the adult criminal. Both were breakers of the laws which society had formulated whereby to protect itself from the evil passions of the few who are criminally inclined in every age. Hence the same sort of treatment at the hands of the law was vouchsafed to both the new and the confirmed offender, with the unfortunate results stated. The chief reason for this earlier attitude of society is to be sought in the igno-

rance which prevailed as to the real nature of children. The older judges and prosecutors failed to understand that every offender against the law is the victim of circumstance, and that the only way to reform him is to surround him with the proper positive environment before it is too late. The proper environment does not consist of the nondescript criminals in the average penal institution whose example and conversation will but confirm and strengthen the youth in his waywardness. Hence in modern times society looks with disfavor upon such disposition of its juvenile delinquents.

Modern disposition of youthful offenders, therefore, bears always in mind the nature of children, the inevitableness with which response follows stimulus, and the relative plasticity of children's morals and looks upon each delinquent as an *individual problem*. The sort of discipline therefore meted out in any given case, according to modern conceptions of justice, will be the discipline which will offset or counteract the vicious tendencies of the individual, and encourage within him the expression of the more positive, constructive virtues. Hence, instead of placing the delinquent child in jail or even in a reform school (called by Miss Madeline Z. Doty a "reform" school), the juvenile court judge, who by the way, differs from the ordinary judge by being a child psychologist, as well as a believer in and lover of children, endeavors to enlist the sympathetic attitude of the home and the employer and perhaps the neighbors of the wayward child, in the end that the environmental influences may be made better. In some cases he may deem it necessary to place a child on probation that is assign a special officer to have oversight of a youth's associations, who shall be held also responsible for his good behavior and for constructive efforts in his behalf. Failing to respond to such generous treatment, and to the opportunities offered by "another chance," the delinquent may have to be committed to a reform school where at least he will be unable to harm society further, and where more con-

centrated effort at reform may result happily for the offender. It is the experience of most cities where juvenile courts have been established and where such procedure has been inaugurated, that only a relatively small percentage of delinquents require commitment to a reform or corrective institution. Still, owing to hereditary predisposition or to particularly vicious and long-standing associations of childhood and youth, many delinquents can only be dealt with in this more drastic manner. In other words, the whole ideal of the modern attitude toward the delinquent is to make over through sympathetic treatment and intelligent guardianship the boy or girl who has become the victim of a bad environment, or who is the innocent victim of a bad heredity. For the former there is great hope; for the latter, less.

Environmental factors in delinquency. Among the environmental factors which may make for delinquency in children may be mentioned poverty and poor economic conditions of the home, failure of the home to manifest the proper oversight and supervision of its children's activities and amusements, etc., the associations of child labor and the so-called "street trades," the influence of bad gangs, etc. Each one of these factors may be sufficient to undermine the morals of a none-too-well-endowed child, and even of children of fine parentage. If two or several such influences as these operate in combination upon the resistance power of a child the outcome is all but inevitable. Take the first of these factors for example — the child nowadays who has no spending money and who finds little of the comforts common to other children in his home or who, coming from a good home which exercises but little authority and solicitude for its children, is free to amuse himself as he sees fit, drifts easily into dissipation and waywardness of some sort or other. If the economic conditions of the family are such that the child is compelled to go to work at a tender age the potentialities of his environment are almost inevitable, and it is a fact well established by statistics

that "among the young delinquents there are two or three times as many persons following a trade as among non-delinquents." One investigator concludes that approximately sixty per cent of the working delinquents are engaged in the street trades alone. Of the influence exerted upon the plastic minds and morals of children by bad gangs, and of the tremendous influence exerted by the habitual forms of amusement which they seek, we have already said enough. Suffice it here to add merely that of all the factors making up the environment of the child the associates and the amusements are without doubt the most important in the influence which they exert.

Nature of offenses. Some years ago President Hall arranged a table on the basis of the returns to the Census of 1890, which showed the nature and distribution of the offenses of children and youths of both sexes who were committed to reform schools between the ages of seven and twenty-one years. The order of greatest frequency he found to be incorrigibility, petty larceny, vagrancy, larceny, burglary, truancy, disorderly conduct, assaults, etc. Waddell has painted for us a very good picture of the typical delinquent, thus:

As he appears in our juvenile courts the country over, the typical delinquent is a boy (eight or nine times out of ten), he is approximately fifteen years old, is slightly under the normal height and weight for his age, may have one or more physical defects of a fairly serious sort, but is probably not more seriously defective than the average public school child (nine times out of ten), his schooling has been more or less interfered with by various causes, his intelligence is normal (three times out of four) although he may be a dull normal or border land case, he has been and probably still is engaged in some form of the street trades or other occupation for gain, he does not care much for school, and will quit as soon as the law allows if he has not already done so, he is a member of a gang, is native born of native born parents, his home ranks somewhere between the very poor and that of the comfortable working class, the chances are even that one parent is dead, has deserted or that the parents have separated, and that

one parent is addicted to drink; if there are several other children in the family he has one brother or sister who is delinquent; the charge against him includes some sort of theft, and he has been guilty of more than one offense; his condition is due one-fourth to family inheritance and three-fourths to environmental causes, of which the influence of his gang is an important element. . . .

Such is the typical delinquent child.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Look up some of the chief facts concerning the organization and work of the juvenile courts. Judge Lindsey's Denver court will prove a very interesting topic to investigate.
2. Report to class any case of juvenile delinquency which you may know. If possible try to analyze the cause. What remedies are being tried? Are they wise ones?
3. Study the latest report of your own local reform school. If possible, make a visit to the institution and observe something of the ideals which appear to be in evidence. Question the superintendent concerning the nature of the offenses which the inmates have committed.
4. Read and report upon two chapters in Jane Addams's *Spirit of Youth and the City Streets*, also two chapters from Jacob Riis's *How the Other Half Lives*.
5. Make a study of your own community, and try to form an intelligent conclusion as to whether or not there are ample facilities provided to keep young people out of mischief.

SELECTED REFERENCES

1. Addams, Jane. *The Spirit of Youth and the City Streets*, chap. 3.
2. Grossmann, M. P. *The Exceptional Child*, chap. 10.
3. Mangold, G. R. *Child Problems*, book 4, pp. 210-90.
4. Waddle, C. W. *Introduction to Child Psychology*, chap. 9.

LESSON 41

THE SUB NORMAL CHILD

What to look for in the observation period

- 1 Whether any of the children appear to be retarded Question the teacher concerning any such children observed Note any peculiar physical or mental characteristics which such children manifest
- 2 Any indications that the presence in the grade of a distinctly and definitely sub-normal child interferes with the progress of the other pupils or with the work of the teacher
- 3 Ascertain from the teacher whether any children in the room have been tested by the Binet, or other tests, for the purpose of determining their mental age

Normality a relative term It is very likely true that you have been accustomed to think of all people as being divisible mentally into two classes — the normal and the feeble-minded Such, however, is not the case It is rather the fact of the matter that every person in the world ranks somewhere upon a scale whose one limit is idiocy and whose other limit is genius The great mass of mankind will rank somewhere in the middle portion of the scale, according to the law of deviation from the normal which we discussed when we were studying heredity But there will be a very large number whose place will fall somewhere between the idiocy extreme and the average, on the one hand, and between the genius extreme and the average, on the other Normality is, in other words but a relative term Most of us are more normal than we are sub- or ab normal, and so we pass as normals Others are more abnormal than normal, hence they pass for abnormals It has been said that all of us are abnormal in some particulars, which statement is very likely true, since, however, those respects in which we are normal outweigh those in which we are abnormal, we think of ourselves as *normals*, and we are deemed by our fellows to be

vided his environmental obstacles and hindrances be removed. It is with the former type of child that this lesson has to do. However, it will be well before turning our attention to the feeble-minded child to pause to gain a little clearer idea of the child who is retarded in his school work, not because of any inherent sub-normality, but rather as a result of unfortunate and remediable environmental influence.

Some of the more common environmental factors which make for retardation of the pupil include unfamiliarity with the English language, frequent or severe illness which necessitates a great deal of absence from school, irregular attendance, due to causes other than illness, such for example as the moving of the family from place to place, outside work, etc. The child, for example, who has language difficulties, another tongue than the English being used in the home by foreign-born parents, may be several grades behind where he should be for his age. He finds it difficult to understand the teacher, and more difficult still to express himself to her. Consequently he is classified as a retarded pupil. How absurd it would be to classify him as a sub-normal! So with children who because of illness or some other condition which makes it necessary for them to lose considerable portions of the school year; they are necessarily retarded, for those children of equal age whose attendance has been regular will be from a half to one, two, or perhaps three grades ahead of them. How absurd it would be to term *such* sub-normal! Every one of the possible causes of retardation — with the sole exception of actual mental deficiency — is capable of being ruled out if the environment be properly manipulated to that end. The child who is held back because of any one of them, or because of several of them operating simultaneously, is the victim of extraneous circumstance and may be absolutely and completely normal — or even brilliant — mentally.

Causes of mental defectiveness. In this lesson, how-

ever, we are to consider only those children who are retarded in their school work by actual mental deficiency, and for whom consequently little can be done in the way of helping them to advance like other children through the grades. There are two general causes of feeble-mindedness: (1) heredity, and (2) accident. Most cases of defectiveness in children are due to the former influence. You recall the story of the Kallikak family, about whom we studied in our discussion of heredity, and you recall also that mental deficiencies are heritable. In general it may be said that parental lines in which there exist traces of insanity or epilepsy or confirmed alcoholism are likely to pass down in their posterity children whose mental powers are deficient. It is estimated that some ninety per cent of all defectives are deficient because of hereditary influences. Nervous disorder of any marked sort in parentage is likely to be reflected in offspring, as is also certain physical defectiveness, such for example as sex diseases. The child of syphilitic parents may be either physically degenerate, or mentally so, or both. The other ten per cent of mental defectiveness is due to such accidental causes as alcoholism of the mother during pregnancy, injuries of the head received either before, during, or after birth; defective glandular action which interferes with nutrition and normal physical growth; and toxins resulting from some disease suffered in early life. Obviously these latter causes of mental defect are *accidental*, rather than *hereditary*.

Classification of defectives. The term *feeble-mindedness* tells us nothing as to the *degree* of mental defectiveness which a child may have. It is rather a somewhat generic word including in its scope all grades of deficiency from the lowest to the highest. We said above that normality is a relative term; it follows from this that sub-normality is likewise a relative term, and hence it is desirable to have a nomenclature applicable to all forms or stages of the defect. When we say "feeble-minded" we are likely to mean only those people who are *very* sub-normal; i.e., idi-

otic. The term *ament* has been somewhat recently applied to denote mental deviation from the normal on the lower side of the scale, and the term *ementia* is defined as "a state of mental defect from birth, or from early age, due to incomplete cerebral development, in consequence of which the person affected is unable to perform his duties as a member of society in the position of life to which he is born."¹ Feeble-mindedness, or *ementia* (Latin: *a* and *mens*: "off in mind"), is further divisible into three degrees, depending upon the *relative* inability of the person "to perform his duties . . ." etc. You have certainly observed that there are some people who are more able to care for themselves and their families than are others, while you would perhaps hesitate to think of them as absolutely normal people. The lowest degree of *ementia* is known as *idiot*. The *idiot* is so defective that he is utterly unable to guard himself from common physical dangers; his mentality has been defined as not being in excess of that of a two-year-old infant, however old he might live to be. The next higher in the scale of *ementia* is the *imbecile*. An *imbecile* is considered to be one who, while able to guard himself from the physical dangers which threaten him, is quite unable to earn his own living; his mental age does not exceed perhaps that of a seven-year-old child, however old he may live to be. Highest in the scale of *ementia* comes the so-called *moron*. A *moron* is able with proper training and oversight to earn his own living, to protect himself from common dangers, but is at the same time totally unable to compete with normal people in the management of his affairs and in the ordering of his life. His mental age is perhaps that of a twelve-year-old child, and never goes beyond that, however long he may live.

Above this stage there ensues, on the scale of normality-abnormality, a condition which may be termed the *borderland*. Persons belonging at this point on the scale are not positively aments, nor are they quite normal. Or, looking

¹ After Tredebold.

at it from the point of view of normality, they are not positively normal, nor are they quite abnormal. Beyond this border-land of normality come all the varying degrees of strict normality, ranging upward to the genius or the highly talented person. Somewhere on the scale every person ever born into the world will finally become fixed, those who are by heredity or accident positively destined coming to their point very quickly, the rest of the people of the world always having potentialities and possibilities of improvement and hence attaining a higher place upon the scale. In this lesson we are not to concern ourselves with the super-normal child, nor the child whose mentality ranks him more nearly at the genius end of the scale than at the other. It is important, however, that you appreciate that for every ament there is a corresponding super-normal, relatively speaking, and that you will find in the schoolroom where you teach not only children of the former mental condition, but also a few of the latter.

Testing the mentality of children. Suppose a teacher has among her pupils in the fourth grade (the average age being approximately ten years) one child who is below grade; that is, who falls short of the attainments of the average children in the class. Naturally she desires to know what the reason is for his backwardness, in order that she may know how to deal with him. If he be merely retarded because of some physical or environmental factor which is capable of remedy or correction, it will be highly unjust for her to deem the child to be an ament. If, on the other hand, he be positively deficient mentally she should know that, too, in order that she may not continue longer to deprive the normal pupils of her time and attention. If the child is a sub-normal the place for him is in the special class, or the ungraded class, which most school systems now provide for such children who cannot do the work required in the system, and where they may receive the full benefit of expert teaching. Hence the matter of determining as accurately as possible the general intelligence of such chil-

dren as are below grade becomes a positive necessity if justice is to be done both the normal and the sub-normal pupils. This becomes particularly indispensable in the case of those children who have been physically and medically examined and in whom no bodily deficiencies are found, and yet who remain one, two, and perhaps three years retarded.

The Binet tests. Fortunately there has been worked out in recent years a series of mental tests which are intended to establish more or less exactly what the mental age of the child is. He may be ten years old by the calendar (chronological age), and yet be no more than six mentally (psychological, or mental age). Or again, he may be ten years old chronologically and yet have a mental age of eleven or twelve. The working out of tests to determine the mental age of children we owe originally to two French investigators, Binet and Simon. These are usually referred to as the Binet tests¹. The tests are made up of a somewhat extended series of tests or problems, graded according to the average abilities of normal children in any age from three years up to fifteen. The tests were arranged by the investigators in the order of difficulty, after trying them out upon a great many normal children between the ages stated. If, for example, two thirds or three fourths of all five-year-olds were able to solve a given problem, that problem was put down by Binet as a problem which five-year-old children of normal intelligence should be able to answer correctly, the inference being that those five-year-olds who could not solve it were of a mental age lower than five years. Naturally a single problem would not be sufficient to warrant any conclusion as to mental age; hence Binet arranged five tests for each age-year (excepting age-year four, which had but four problems) from three up to and including fifteen, with an added list of five for adults, making a total of fifty-four tests in all. The nature of the problems which were originated is such that no attempt is made to test any specific ability of a child,

¹ Pronounced Bee-nay.

tient's life was at stake. Likewise it would be absurd for the ordinary teacher with a mere passing knowledge of mental testing to attempt to diagnose the mentality of children. Perfect familiarity with the materials, a very keen judgment, and much ingenuity are necessary in the administering of the tests.

Tests for the ninth year. The following represent the six tests in the Stanford Revision for the ninth year, and are typical of the ninety in the whole series:

(*Six tests, value of each two months.*)

1. Date. (Day of week, month, day of month, year.)
2. Weights. 3, 6, 9, 12, and 15 grams to be placed in order.
(Two or three results to be correct.)
3. Makes change. (Two of three. No coins, paper or pencil)
10 less 4; 15 less 12, 25 less 4.
4. Repeats 4 digits backwards. (One of three trials to be correct.)
5. Three words woven into a single sentence. (Two of three)
Boy, river, ball, work, money, men; desert, rivers, lakes.
6. Rhymes. (Three rhymes for two of three words. One minute for each part.)
Day, mill, spring
Alternative 1: Months. (Fifteen seconds and one error in naming.)
Alternative 2: Stamps, give total value.

The intelligence quotient. Since there are six tests in each age group from III to X, each test in this part of the scale counts as two months toward mental age. A child, for example, passing all the tests in year IX would be credited with twelve months; if he passed only four of them, he would be credited with but eight months. In group XII there are eight tests which, because year XI is omitted, have the value of three months each. Similarly, each of the six tests in XIV has a value of four months, year XIII being omitted. The calculation of a child's mental age is therefore a very simple matter.

The rule is: (1) credit the subject with all the tests below the point where the examination begins, and (2) add to this basal

EXERCISE 6. MARK IN EACH PICTURE WHAT IS LEFT OUT



1



2



3



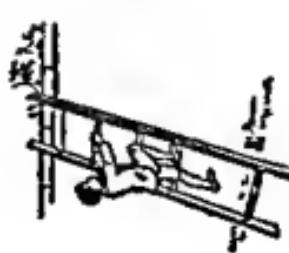
4



5



6



7



8

FIG. 1



16



15



14



13

12

11

10

9

8

Group intelligence tests. Before leaving the subject of mental testing, mention should be made of a still more recent development than the Binet tests in this field. The use of the Binet and other related tests is obviously limited in scope, inasmuch as but a single individual can be tested by one examiner at a time. The war brought psychologists face to face with the necessity of classifying large numbers of men on a mental basis in the briefest possible time. To meet this need, the examiners devised a variety of "group tests," so called, by which the number of individuals tested simultaneously was limited solely by the range of the examiner's voice. More recently still, scores of adaptations of these army tests have been made by as many investigators for practical use in the schoolroom. For the most part thus far the range of group tests has not included children below the upper grades, although there are now available several which are capable of being used in low grades.

The group tests are designed, like the Binet tests, to diagnose general intelligence rather than specific abilities. Fig. 9 is from the *Haggerty Intelligence Tests*, and is typical of group tests in general. A manual of instructions and procedure which accompanies all scales of this sort operates to rule out almost totally the personal equation of the examiner, making the use of such intelligence tests purely a mechanical process on the part of the teacher, no special training in giving them being necessary.

Educational or achievement tests. There is still another variety of test now commonly in use in progressive school systems. These are called *educational*, or *achievement* tests, as distinguished from *intelligence* tests. As their name implies, they are designed to measure the amount of knowledge or skill which a child may possess in any given curricular subject. Like the intelligence tests, they are carefully standardized by calculating as the standard of what a child in the sixth grade in arithmetic, for example, should be able to achieve, what extensive investigation has shown to be the average of the abilities of great numbers of children in the sixth grade in arithmetic. Their use, ob-

viously, places in the teacher's hands a means of determining whether her children are up to the standard in ability in arithmetic, etc., and if not, wherein their deficiencies consist. They are a sort of educational yard-stick which has been now sufficiently developed to include the measurement of abilities in nearly all the school subjects. Fig. 10 represents a section of the *Ayres Handwriting Scale*. The complete scale includes three types of handwriting, having each a value of 20, 30, 40, etc., up to 90. Only the lower (20) and upper (90) limits are shown in Fig. 10.

A

Weard, his trusty fowl
and army of name for
he who demanded had too
beevil derement his of
Confused Completely Hawaii

B

The great error in Rix's compositions
lends of profitable labor it could not be
conditioned worse the word yet probably as
left alone little was done until nearly a
had estate Patrimonial but thought that a

C

parlor the spattering &
figures the of Rix various
this in crosses with shot
rocking cold feather and
hanger and belt ground

FIG. 10 A PORTION OF THE GETTYSBURG EDITION OF THE AYRES HANDWRITING SCALE

Reproduced in part with the special permission of Dr Ayres and of the Russell Sage Foundation

We had not been home long w
was heard from the distance A
good before way gave soon ge
Daughters their with romped
the with gossiped cottage and

We had not been home
of music was heard f
of country cheer good be
guests the of bashful
not heard been music

Your mere puny stri
at the flourish of t
passed by with inc
claims hankers
their at more seer

FIG. 12. A PORTION OF THE "CENTENARY EDITION" OF
THE AYRES HANDWRITING SCALE.

Reproduced in part with the general permission of Dr. Ayres and of the
Kappa Sigma Foundation.

LESSON 42

THE GIFTED CHILD

What to look for in the observation period

- 1 Whether any children in the same grade appear to be brighter than others Question the teacher concerning any such children observed Note any peculiar physical or mental characteristics which such children manifest
- 2 If the room in which you observe chances to include children of several nationalities attempt to discover any racial differences in brightness among them Do any of them belong to the lower social classes?
- 3 If possible visit a special class for bright pupils and compare the work done and the attitude and response of the pupils with those in the regular grades where chronological age is the chief basis of grading
- 4 Whether brightness in arithmetic goes with brightness in grammar or brightness in composition with brightness in drawing etc Note any case in which unusual talent in any one subject is manifested

Earmarks of the bright pupil In our last lesson we were concerned especially with those children who rank on the lower end of the normality abnormality scale and who are, hence, properly termed *sub-normal* or *dull*. In this lesson we are to turn our attention to the upper end of the scale and study those children who are mentally superior, and who are termed *super normal* or *bright* or *accelerated*. In times past we have concerned ourselves more with the former than with the latter type of child partly because the needs of the inferior child were obviously so much greater if he was to be turned out at the end of the school age anything like a fair product of the educational system and partly because we knew so little concerning the intellectual thirst of the superior child. Then, too, the bright children in the schoolroom always conduct themselves tolerably

creditably; consequently they may be left largely to themselves by teachers who are hard put to it to keep the dullards in line with the average.

The gifted child is to be found in the school population of any system in approximately the same numbers as the dull one. In your observing from time to time you have noted again and again the brighter faces, the more alert and eager expressions, the better control of movements, the greater readiness and intelligence of responses, the nicer reasoning, the more vivid imagination, the deeper intellectual curiosity, the better memories and clearer understandings which ordinarily differentiate bright children from dull. You have observed how prone the teacher was to call twenty times during the period upon bright Johnnie or bright Sue, whose hands were so eagerly upraised and whose responses proved so satisfactory, while perhaps she all but disregarded dull Johnnie and dull Sue, who sat unresponsive throughout the entire lesson. If you were anything of an introspectionist, you no doubt appreciated keenly the mental process of the teacher who during all this time was compelled to make a lesson "go" to the satisfaction of visitors, handicapped constantly by the poor efforts of those children who were less capable mentally than the average and the super-average.

the end of the assigned task, this twelve-year-old, whom we may call Harry, presented a perfectly blank piece of paper to his teacher. Forthwith she demanded an explanation of his failure to perform the task required. Harry insisted that he knew all the words in the selection. The teacher, long out of sorts with the boy, upbraided him for untruthfulness and laziness and was much incensed at his behavior. Sometime afterward Harry was examined with the Binet tests, and, though twelve years old chronologically, he proved to have the mental age of a child of sixteen years and two months! In other words, he was accelerated more than four years, and instead of being in the fifth grade should have been in the first year of high school. No wonder that he had been often listless and lackadaisical in his schoolroom work; no wonder that he lost all interest in studying and was winning by his negligence and idleness the disapproval and censure of his teacher. You have seen a dog, brimful of energy and life, tugging at his leash in order to win his freedom and leap off madly and ecstatically to release his pent-up energies. The trouble with Harry was that he had been too long held in an intellectual leash. Consumed by eagerness to run at a rapid intellectual pace, he was yet restrained by the system, and hence gradually not only ceased to tug at his halter but ended by yielding absolutely to its constraint.

There are a great many school children like Harry whose whole future attitude toward and success in life are jeopardized because their intellectual talents are either never discovered or else are never given the favorable environment for development. Society can ill afford to risk losing the contributions which men and women of talent might make to it if they were given early and ample opportunity to do their best possible work in the schoolroom. Much of the progress of civilization would never have been made — or at least the process would have been much slower — had it not been for those individuals who excelled the mass of their fellows in intellectual capacity, and who were for that

ness: heredity and accident, the first being the more usual. Brightness, however, is never the resultant of accident. The secret of brightness is locked up in the germ plasm of the ancestry, and there alone. You have observed often enough that bright children are usually the offspring of superior parents. No amount of training and no favorable manipulation of environment can create ability, as we have already seen. At best these agencies can only foster and cherish the innate powers of the individual, and make more inevitable and direct their development. This is not to be interpreted as meaning that only highly educated parents who move in the best circles may produce children of exceptional ability. It is, of course, true that the children of such parentage will be more likely in the long run to excel the offspring of parents low in the social scale, for the very fact that people are well educated and are associated with successful and prosperous neighbors points almost unmistakably to a superiority of natural endowment. It is likewise true, however, that marked mental ability and superior intellectual capacity reside in no special class nor are exclusively the product of any specific environment. Many a man and many a woman of surpassing powers of intellect have sprung from humble surroundings. Accident of birth and environment are no obstacles to the presence of true genius. The pity of it is only that all too often the environment is too harsh, too unsympathetic, too ignorant, with the unfortunate result that the natural talents never get the chance to find intelligent expression. It should be borne in mind, however, that the ratio of bright children in the schools who come from homes of the lower occupational status to those who come from homes of a higher social class is by no means an even one. F. A. Woods¹ leads us to the conclusion that the upper one per cent of the population of a country produces as many men of genius as all the other ninety-nine per cent put together.

¹ "Heredity and the Hall of Fame"; in *Popular Science Monthly*, May, 1913

intelligence and educational testing has placed in the hands of school officials a means of discovering with tolerable accuracy all children of superior ability, as well as a method of determining approximately what that ability is. The next step, logically, is to provide extraordinary facilities for the promotion and advancement of such gifted pupils through the school system. This has already been done in several cities, and the reports of teachers and administrators are beginning to appear in the educational literature. It is not our province in this volume to enter into any survey of the practical results obtaining from this special class work. We are interested merely in the psychology behind the movement. Professor Whipple is credited with the assertion that ten out of one hundred children in the schools are able to complete satisfactorily two years' work in a single school year. The older method was to permit those children who seemed intellectually fitted thus to leave their fellows behind to "skip a grade," as the saying goes. Theoretically, this scheme resulted literally in getting the child ahead in accordance with his abilities. Actually, however, it inevitably left "gaps" in his ordered knowledge which were either never adequately filled, or which he was compelled at some later time to fill in at the cost of no little time and effort on his own part as well as patience on the part of the teacher.

The only really satisfactory and sequential method of rapid advancement through school lies in the special class, tempered to the capacities of the scholars. Ideally, the aims of such classes for brighter children do not include merely saving time in the intellectual evolution of talented boys and girls; time-saving is but a side issue. The chief purpose of the specially organized class is to provide the learner with a richer course of study than he would otherwise enjoy. Along with this richness of content go the enthusiasm and eagerness which are naturally felt by children who find that there is no limit to their intellectual incursions, and that their individual tastes and preferences may, to an extent hitherto undreamed-of, be satisfied.

- children Discover in so far as you are able wherein the superiority of any given child lies Report in class
- 3 Familiarize yourself with the viewpoint and investigations to be found in chapter 11 of Terman's *Intelligence of School Children*
 - 4 Look up the files of the *Journal of Educational Research*, and of other recent periodicals devoted to psychological investigation and report to class upon some survey of gifted children
 - 5 Familiarize yourself with some of the more common group tests now in use for determining the general intelligence of individuals Cf especially the Otis and the Haggerty Tests Confer with your instructor as to sources

SELECTED REFERENCES

- 1 Terman, L. M. *The Intelligence of School Children*, chaps 10 and 11
- 2 Woodrow, H. *Brightness and Dullness in Children*, chap 13

LESSON 43

INDIVIDUAL DIFFERENCES

What to look for in the observation period

- 1 Extreme differences in general intelligence among the pupils
What are some of the factors which indicate the brightness or dullness of a child?
- 2 Evidences of striking physical differences between pupils of the same age or attainments, such for example as differences in size, physical type, condition of health and nutrition, acuity of the sense organs, etc

Two extremes Shortly before his fifth birthday, Francis Galton wrote the following letter to his sister, Adele

My dear Adele

I am four years old and can read any English book I can say all the Latin Substantives and Adjectives and active verbs besides 52 lines of Latin poetry I can cast up any sum in addition and can multiply by 2 3 4 5 6 7 8 9, 10 11

I can also say the pence table I read French a little, and I know the clock.

Francis Galton,
February 15, 1827 [February misspelled]

And when he was ten years old, he wrote thus to his father

December 30, 1832

My dearest Papa

It is now my pleasure to disclose the most ardent wishes of my heart, which are to extract out of my boundless wealth in compound, money sufficient to make this addition to my unequalled library

The Hebrew Commonwealth by John	9
A Pastor Advice	2
Horne's commentaries on the Psalms	4
Paley's Evidence on Christianity	2
Jones Biblical Cyclopedia	10
	27

Dr. Woodrow, citing the above letters of Galton, compares the intellect of that remarkable man while he was yet a child with that of a girl named Abbie who was admitted to the Vineland Training School in 1900 and whose subsequent record was published ten years later in the bulletin of the School.

At the time of admission Ahbie was small for her age, left-handed, and awkward. She always put the same foot forward when going up or down stairs, she knew her letters but could not read; she could count to ten, she knew some color and form, and she sang a number of hymns that she had learned at home. Her sight and hearing were normal, and she was fond of play. Among Abbie's more unfavorable characteristics were a bad memory and a poor power of imitation. She was gluttonous, untidy, untruthful, sly, and profane. Three months after her admission she could thread a needle and sew on buttons, could dust and rub floor a little, had learned to read *A man ran*, and *I see a man* (sometimes), counted to twenty, and, with help, could do such number work as this:

$$\begin{array}{ccc} 1 & 2 & 3 \\ \underline{1} & \underline{1} & \underline{1} \end{array}$$

To-day, so the report runs:

She is small for her age. She can braid corn-husks a little; can make a bed, can iron an apron; cannot count the cost of three one-cent stamps and three two-cent stamps, with the stamps before her; cannot repeat five figures or a sentence of fifteen words; defines only in terms of use; can read a few sentences, spell a few words, and write about twenty-five words from memory; knows the days of the week, but not the months of the year; and does not know how many fingers she has on both hands.

Francis Galton was a highly talented and gifted man; Ahbie was a feeble-minded person. The mentality of both was conditioned on their native endowments, not upon differences in training. These cases mark the two extremes of individual differences from the standpoint of general intelligence.

What is the significance of individual differences? The above represents, as Dr. Woodrow suggests, the two poles

significance which the investigation into the real nature of individual differences is bound to have in reducing the number of misfits in professions, trades, and industries. When the psychologist can say to this youth: "You are best endowed for literary pursuits," and to this one: "You should become a mechanic," etc., much progress will have been made toward bringing not only success but serenity of mind to the individuals which go to make up society. And such prediction of vocational fitness will only become possible when more is known concerning the psychology of individual differences.

It must not, however, be inferred from all this that the Binet scale alone is a sufficient test of vocational endowment. At best, as we have seen, the Binet problems are intended to demonstrate the *general intelligence* of a child, without any special reference to his particular bents in drawing, music, art, mathematics, salesmanship, etc. It is true, however, that the Binet tests in the hands of an experienced investigator are "capable of bounding roughly the vocational territory in which an individual's intelligence will probably permit success, nothing else preventing."

Within the past few years there have been developed a large number of supplementary tests designed more particularly to discover and diagnose the vocational aptitudes of individuals. Let it be supposed, for example, that a certain type of work requires quickness of perception and powers of sustained attention on the part of those who are to succeed best in it. Proof-readers, loom-workers and weavers, mail clerks, *et al.*, should presumably be possessed of these qualities far more than ditch-diggers, stokers and dish-washers. Fig. 11 represents a single one of a great number of tests available for testing these mental traits. Both the correctness of the reading and the time required for completion of it are taken into account in determining a person's final score.

If the above test were to be given to one hundred individuals selected at random, the results would show wide di-

vergences. A few persons would complete the story satisfactorily in, say, three minutes; a few others would require, say, ten or more minutes, while the greater number would take perhaps five or six minutes. Were the same test to be given to a number of experienced proof-readers there would probably be much less divergence in the time required for the task. It goes without saying that a printer desirous of engaging the services of a young man whom he wishes to train for proof-reading would do well to choose not one of those individuals who require ten minutes for the reading of the "Indian" selection, but rather, other things being equal, one of those who complete the reading in three minutes.

Fig. 12 represents a test of a slightly different nature. It is a type of "substitution test," so called from the task required, which is to substitute for the numbers in the two columns the symbols at the head of the sheet which are appropriate. A record of the time and accuracy of performance is kept and the individual's score computed from both factors. Again, of one hundred random individuals selected to perform this test, a few would complete it in five minutes, a few would require fifteen, while the greater number would, perhaps, finish in approximately seven minutes. Can you tell what trades or professions would best suited for those individuals who could satisfactorily complete the test in the shortest time?¹

Some evidences of individual differences in children. Physically, children are so different that we do not need to dilate upon that phase of individual differences. In size, body-weight, proportion of parts, stamina and health, nutritional condition, etc., a thousand children would present very wide divergencies. We are interested in the mental, however, not with the physical side of life — except, of course, in so far as the mental is understood to be always more or less conditioned upon the physical. The same thousand children, if they could be classified into groups

¹ Description of this and other tests of a similar character in Whipple's *Manual*, Reference 3.

according to mental, moral, social, and intellectual characteristics, would present most glaring differences in every conceivable respect. Indeed, the classification would be utterly impossible, since there would be discovered to be x amount of *a* quality in one individual, y amount of *b* quality, and z amount of *c* quality in the same individual; and more than likely no other individual in the entire group would present exact, if indeed approximate, amounts of either quality *a*, *b*, or *c*. In such marvelous fashion does the germ plasm operate to produce individuals. It is as though back of the germ cells, nature was delighting in making her potential creatures as varied as possible, not unlike a complex picture-puzzle the parts of which can never be fitted exactly together!

In your observation of and intercourse with boys and girls you have no doubt noticed to a degree the presence of these individual peculiarities which differentiated one child from another. One child is affectionate, another is undemonstrative; one is shy, another is bold; one is honest, another is dishonest; one is a natural leader, another is a natural follower; one possesses much originality and ingenuity, another is slavish and imitative; one has the virtue of thrift, another is wasteful; one is characterized by conceit, another by as deep humility; one is timid, another is fearless; one is bright, lively, spontaneous, another is dull, sluggish, inert; one is refined, another is coarse and vulgar; one is vain, another is modest; one is particular, another is indifferent and careless; one is hoisterous, another is retiring; one is respectful and reverent, another is disrespectful and irreverent; one is curious and inquisitive, another is passive and indifferent; one is emotional, another is colorless; one is rough or even cruel, another is sympathetic and tactful. And so the list of variations might be extended to comprise all the mental, social, and moral qualities of which children are possessed. And in addition to the extremes here enumerated there exist, of course, all degrees between, both on the negative and on the positive sides. You can now begin to un-

derstand something of the significance of individual differences.

Individual differences in school work. The following verse from Stevenson's *Child's Garden of Verses* was read to a class of ten-year-olds with the purpose of noting individual differences in the faithfulness with which they could write down the story in their own words immediately after hearing it:

In winter I get up at night
And dress by yellow candle-light.
In summer, quite the other way,
I have to go to bed by day.

I have to go to bed and see
The birds still bopping on the tree,
Or hear the grown-up people's feet
Still going past me in the street.

And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play.
To have to go to bed by day?

I have selected two versions written by two girls, V and R, as representing typical individual differences in memory, spelling, and linguistic abilities, etc.

V's version:

In winter I get up by night and dress with a yellow candle-light. In summer I have to go to bed by day. I see the birds on the tree-tops and grown-ups feet I here. I'd love to stay out and play.

R's version:

In winter I get up at night and dress by yeoll candl light. In suner quit the our way I have to go to bed by day. And still her the birds still.

Had the task given to the children been one in arithmetic or in any other subject of study the results would have been similarly variable. You will not observe children in the

schoolroom long before you will discover for yourselves how different are their powers of attention, of observation, of perception, how widely they differ from one another in imagery types, imagination, memory and reasoning ability, in interpretative powers and in powers of comprehension, in concentration and perception. You will find also, as we have said before, that children in the same grade manifest all degrees of ability and inability in music, drawing, writing, composition, spelling, manual training, arithmetic, and in each of the other subjects included in the curriculum.

In how far individual differences in abilities are due to differences of training and environment and in how far they are the results of hereditary differences, need not concern us here. As we have pointed out so often in preceding lessons, however, inheritance is doubtless a far more powerful factor in the shaping of abilities of individuals than is the environment in which they are nurtured. This, obviously, does not mean that the factors of nurture are of no significance we know better. It does mean, however, that whatever our educational aims, values, or processes they must all ultimately proceed from the general truth that boys and girls are what they are individually, not because of the accident of environment and training but rather from innate differences which lie hidden in the secret of the germ plasm.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Study Thorndike's chapter on Individual Differences
- 2 Using your own initiative and originality devise some simple test for demonstrating the phenomenon of individual differences and try it upon two or more students or friends. Make a note of any peculiarities discovered and report the result of your test in class.
- 3 Study some one test in Whipple's *Manual* and be prepared to demonstrate it in class. If necessary confer with your instructor for blanks, apparatus etc.

THE LESSON APPLIED

- 1 Knowing what you do of the frequent lack of close parallelism between chronological and psychological age what criticism have you to make concerning the prevalent method of grading children?

- 2 Would it be wise or possible to group children in their school work strictly in accordance with the relative sameness of their abilities, or is it more wise to limit the grouping to three classes—the dull, the bright, and the average?
- 3 The statement has been made that there is no such thing as an average child. If such is the case, what is its pedagogical significance?

SELECTED REFERENCES

- 1 Terman, L. M. *The Measurement of Intelligence*, pp. 16-21
- 2 Thorndike, E. L. *Educational Psychology*, vol. 3
- 3 Whipple, G. M. *A Manual of Mental and Physical Tests* (general)

LESSON 44

THE UNSTABLE CHILD

What to look for in the observation period:

1. *Evidences of the presence of psychoses or neuroses in any of the children.* Confer with the teacher, if possible, having her indicate to you any children who might be classed as mentally unstable.
- 2 Any cases of habit-spasms, or "tics" in the children.

The unstahle *versus* the mentally deficient child. In the two lessons preceding we have concerned ourselves with children whose mentality tested above or below the average for their chronological ages. In this lesson we are to investigate mental or nervous instability in children. If you have observed many times in the schoolrooms of your city, your attention has without doubt been called occasionally to children who seemed hyper-sensitive, or abnormally suggestible, or highly nervous, or unduly emotional, or who manifested other forms of instability. It is not improbable that you are acquainted with certain adults who are similarly unstahle and neurotic men or women who are totally unable to look out upon life normally and calmly; whose self-control has never been established with any degree of dependability, whose eccentricities are over prominent; who are the perennial victims of exaggerated fears and fore-holdings and dreads; who are characteristically indecisive and changeable in viewpoint; upon whom neighbors and friends are likely to look as "queer," or "peculiar" people. Such adults are but the unstahle children of yesterday grown up, and they are living, as it were, over a volcano which may erupt at any time, plunging them into serious mental disorder or nervous complications.

But such people are by no means mentally deficient, either as children or as grown-ups. Indeed, they are often

brilliant, testing well beyond their chronological age, or at least ranking with the average of all other children mentally. A defective heredity is often a tremendous factor in the behavior of the unstable child, and some of the world's most famous men have been distinctly neurotic. We can but conclude, therefore, that heredity in the case of the mentally unstable does not so much decrease the native capacities of the individual as it lessens the normal control which he has over his capacities and over himself. In general, we may say that the unstable person lacks that balance which characterizes the normal responsible person. He has none of the niceties of control and coördination of movements that his normal fellow possesses. He is impulsive, possesses numerous idiosyncrasies, and is often excessively irritable and depressed, becoming at times, however, quite the reverse.

Surely no more classic description of an unstable individual could be cited than that of Dr. Samuel Johnson which is given by Lord Macaulay. And the very fact that the person described was the great Lexicographer should leave no doubt in our minds that mental dullness does not necessarily go with mental idiosyncrasy:

He had become (before he left the university) an incurable hypochondriac. He said long after that he had been mad all his life, or at least not perfectly sane; and in truth eccentricities less than his have often been thought grounds sufficient for absolving felons, and for setting aside wills. His grimaces, his gestures, his mutterings, sometimes diverted and sometimes terrified people who did not know him. At a dinner table he would, in a fit of absence, stoop down and twitch off a lady's shoe. He would amaze a drawing-room by suddenly ejaculating a clause of the Lord's Prayer. He would conceive an unintelligible aversion to a particular alley, and perform a great circuit rather than see the hateful place. He would set his heart on touching every post in the streets through which he walked. If by any chance he missed a post, he would go back a hundred yards and repair the omission. Under the influence of his disease, his senses became morbidly torpid, and his imagination morbidly active. At one time he

would stand poring on the town clock without being able to tell the hour. At another he would distinctly hear his mother, who was many miles off, calling him by name. . . . With such infirmities of body and mind, the celebrated man was left at the age of two-and-twenty, to fight his way through the world.

Physical symptoms of instability. Some months ago the writer chanced to be in attendance at a psychological clinic, i.e., a testing of the mentality of children with the Binet or other tests. One of the children who had been sent in by her teacher was a girl of twelve years, whose muscular control was complained of as being almost entirely lacking. The Binet tests showed the child to be of average intelligence for her age. But when the physician made his examination it was revealed that she was anæmic and was in a general condition of poor health, aggravated no doubt quite as much by her nervous condition as the latter was aggravated by the former. Among other things, she was asked to extend her arms horizontally in front of her, keeping her hands open and fingers outstretched. The child was perfectly at ease, but her arms trembled like leaves in the wind. She appeared to have almost no control over the involuntary muscles of her body, with the result that they were constantly twitching. Of course none of us can altogether control these involuntary twitchings of our muscles. You can demonstrate this fact to your own satisfaction if you so desire by attempting to hold your outstretched hand perfectly still. In spite of your best effort, you will find if you attend closely that there are circumscribed and rhythmical tremors which are constantly passing through the hand. But the child referred to above possessed practically no control, and her hands and arms made very visible excursions in rapid succession to and fro and up and down.

This lack of control over the musculature is one of the common physical accompaniments of instability. Others may be inability to control the speech organs and even facial expression, nervous fingering of objects, clumsiness of gait and of general movements. Often the heart action is irregu-

easily humiliated and chagrined. They are very fastidious, and often display marked aversions to foods of certain varieties. The sexual emotions are often precociously developed in such temperaments as theirs. The gregarious instinct is strong, and unstable children suffer often with loneliness; hence, they seek always companionship and crowds. They melt in tears at the slightest provocation, but are apt to be laughing happily the next moment. The unstable child loves excitement, is notoriously imaginative, but is hopelessly inattentive. Observation is not infrequently poor, but comprehension is likely to be quick. Terman says of such children:

The nervous child is hesitating, timid, vacillating, unable to cope with the real. More and more he falls back upon day-dreams, books, imaginative enjoyments, etc. He plays little, adjusts hardly to other personalities, is seldom a leader. Not infrequently he is made an outcast by his fellow pupils. Not being able to mingle on equal terms with other children or to depend on himself, he clings to adults and becomes oddish and precocious. . . . Absurd scruples, religiosity, over-consciousness may appear. The child weeps from stepping on ants, considers it sinful to eat meat, suffers torment over imaginary sins, etc.

Common forms of psycho-neuroses. (1) *Epilepsy.* One of the common results of psychic and nervous disturbance is epilepsy. This form of neurasthenia (or psychasthenia, since the terminology is by no means fixed among the authorities) is usually inherited, and is therefore not likely to be amenable to treatment. Children who are subject to epileptic attacks may be bright, but are more usually dull. Aside from the hereditary predisposition, the tendency may be aggravated by local irritations, such as eye-strain and decaying or impacted teeth, nasal obstructions, etc. Children who are afflicted with *paroxysmus nocturnus* may become epileptic at the critical period just preceding adolescence. Early convulsions of childhood which are due to local irritation are frequently also followed by pronounced epilepsy at puberty. Under no circumstances should the child subject

to frequent attacks in school be permitted to attend classes with normal children, there being a possibility that a sort of "psychic contagion" may be set up. The patient, during the period of attack by epileptic fits, ordinarily loses his memory completely for the time being, and when he emerges from the spell is entirely at a loss to recall anything that has happened.

(2) *Hysteria.* Janet, the famous French psychologist, says of hysteria: "It is a form of mental depression, with a tendency to dissociation and the emancipation of systems of ideas and functions which by their synthesis constitute the personality." In other words, hysteria is a condition of the mental life wherein the unity of mental process is dissipated. Consciousness may become a very multiplex state in contrast with its usual unity. Some systems of idea-groups may be totally disconnected from the rest and perhaps be relegated to the unconscious, where they constitute a continual menace to the integration and relatedness of all the other ideas. In consequence, what is termed "multiple personality," in which the foreign group of associates and ideas alternate with the other conscious groups in controlling the behavior of the individual, may come about. The afflicted one may be a Dr. Jekyll one day or one minute, and a Mr. Hyde the next. Dr. Franz enumerates, among other symptoms of the hysterical subject, the following four: (1) emotional instability; (2) abnormal suggestibility; (3) an exaggerated ego, or morbid desire to win notoriety and sympathy; and (4) motor disturbances, such as convulsions, tremors, and paralyses. Real hysteria, as Dr. Terman points out, is not extremely common, "but the emotional instability and the hyper-suggestibility bordering upon hysteria are not uncommon. To fixate the child's attention too intently upon matters of health, to overstimulate the precocious, to permit day-dreaming to take the place of productive work, to destroy in any way the feeling of self-reliance and personal independence, all help in the formation of characters that may become hysterical."

(3) *Dementia praecox* *Dementia praecox* or the 'insanity of adolescence' is a form of psychosis which involves usually sexual imagination, fantastic day-dreaming brooding over disappointments and a lack of relation between thought and action. This latter is perhaps the most characteristic symptom of this form of insanity. The individual afflicted is likely to be more brilliant than the reverse but exceedingly unpractical. The following description of the malady by Dr Meyer is perhaps the best one available.

There develops an insidious tendency to substitute for an efficient way of meeting difficulties a superficial moralizing self-deception and an uncanny drift into many varieties of shallow mysticism and metaphysical ponderings or into fantastic ideas that cannot possibly be put to the test of action. All this is at the expense of really fruitful activity which tends to appear insignificant to the patient in comparison with what he regards as far loftier achievements. Thus there develops an ever widening cleavage between thought-life and the life of actual application such as would bring with it the corrections found in concrete experience. Then under some strain which a normal person would be prepared for a sufficiently weakened and sensitive individual will react with manifestations which constitute the disorders of the so-called 'deterioration process' or *dementia praecox*.

Dr Meyer gives among others the following case, which may be taken as typical of the disorder.

She began school at seven years was smart and applied herself well but at the age of eleven she seemed to be failing and was thought to be studying too hard. She grew thin seemed nervous and complained of headaches at twelve she was in poor health.

She was disappointed at home (later) for some time dreamt of becoming a teacher but soon sank into hypochondriacal ruminations and finally at twenty-one after useless surgical operations passed into a confused religious excitement, followed by stupor in which she sits inactive and irresponsive with the top-heavy and yet empty notion of being good of saving the world etc.

Other neuroses Among the other neurotic disturbances which are more or less frequently observed in children should be mentioned *chorea*, or St Vitus's Dance a malady

associated usually with rheumatic affections of the joints. Dr. Terman describes its onset and development thus:

At first the child may be considered unusually nervous. It drops things, has difficulty in sitting still, is clumsy in eating, in buttoning the clothes, has an awkward, shuffling, unsteady gait, and stumbles. Sometimes the first symptoms are slight spasms of the facial muscles, twitching of the eye, grimaces and the like. Later the movements become intensified, irregular, jerking, and almost constant except during sleep. In severe cases speech is almost impossible, and the child may be practically unable to walk, or to handle fork or spoon in eating. . . .

Habit-spasms, too, or "tics," should also be included among the psychoses of childhood and adolescence. By habit-spasms are meant those automatic and involuntary muscular twitchings which are not infrequently met with in children. Ordinarily these twitchings are local, that is, they are less widespread over the body than is true of the choreiform twitchings. They involve "an isolated twitching or contraction of any muscle or muscle-group, as of the face, tongue, neck, or organs of respiration, such as elevating the lip to meet the nose, sniffing, lightning-like blinks or nods, writhing, shrugging the shoulders, elevating the chin and stretching the neck, protruding the tongue, showing the teeth, emitting queer guttural noises, etc." Very few children ever grow up to mature years without having at some time been the victims of habit-spasms of some form or other.

TOPICS FOR SPECIAL STUDY AND REPORT

1. Confer with the teacher of some fifth or sixth grade, and get as much information as possible from her as to any neurotic children whom she chances to have in her room. Report the results of your inquiry to class.

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LESSON 45

ADOLESCENCE

What to look for in the observation period

1 The pupils in the seventh and eighth grades will in most cases have entered upon the period of adolescence. In your observation work in these grades note especially any indications that you may chance upon to the effect that adolescence in its earlier stages is a period of heightened and exaggerated sense of self of dreams and reflectings of social organizings and social interests of restlessness and moods etc etc

Definition of the term adolescence. Roughly speaking the period known as *adolescence* may be said to extend from the twelfth to the twenty fourth year of life. More accurately, it begins in temperate zones around the fourteenth year, in the case of boys and one or two years earlier for girls. In warm climates its onset is somewhat earlier. The period of adolescence continues until maturity is reached which is generally considered to be approximately twenty five years for men and perhaps twenty three or twenty four for women. It is bounded on the one hand by childhood and on the other by adulthood. It is a sort of interregnum between the frolic of childhood and the earnestness and labors of maturity. It is the period of "storm and stress" of human existence in which the entire outlook upon life undergoes a marked change, when the values of infancy and childhood are reexamined critically in the light of the dawning personality, when new ideals new standards new viewpoints are brought into existence for the future adult individual, when concern for the human and social and moral obligations and responsibilities and possibilities have their true birth.

You recall your study of the period in human history

but a boy in stature, but now suddenly he "shoots up" almost overnight. The mother and perhaps the father, too, confess with a degree of parental pride that is delightful that the boy is taller than either of his parents now! And so with the girl. Around her twelfth year she begins to "run up," and in a few months has reached the stature of the mature woman, without, however, her robustness and weight. The muscles during adolescence grow more than at any other time. At the very first of the period usually appears a strange awkwardness and lack of gracefulness which is due to the fact that at puberty there is an initial period of lack of motor control. It is probable that abnormal or excessive insistence on the part of school or home upon activities demanding delicacy and niceness of execution during this period may lay the foundations for subsequent instability and neuropathic ills, such as we referred to in the preceding lesson. The first year or two of adolescence is rather a time for the development of the all-round physical body than for emphasis upon such accessory skills as artistic writing, drawing, and upon too much confinement of school work. This, of course, does not imply that formal education should cease for a season at the twelfth or thirteenth years; it rather points to the wiser course of more emphasis upon fundamental than upon accessory muscle groups. You are perhaps in general familiar with the initial phase of puberty and adolescence as it is commonly observed, for example, in boys, "whom nobody loves except their mothers" during the time in which they are in this generally awkward and graceless period of their evolution. Or again, you are familiar with its manifestations in the voice of the boy which during the early part of adolescence is subject to "change" — a liability which causes him no end of embarrassment. The reason back of this undependability of the voice is to be found in the fact that at adolescence the vocal cords become elongated as the larynx enlarges, thus interfering somewhat with the previously formed voice-control habits.

an individualist, becoming only a group member as he grows into the period of later childhood. With the coming of adolescence the social instincts enter their golden age. Egoism is likely to give place to altruism, although it may not. To quote from Dr. Hall:

... The youth alternates from extreme individuation to mere slavishness in following his mates; from quixotic generosity to selfishness; from the highest ideals of social self-sacrifice to absurd notions of his rights. . . . Before pubescence games and plays are largely competitive; after it, team work is the most marked characteristic, and with it the gang and the club appear. While the youth is even more egoistic than before, while he is excessively self-conscious and perhaps aggressive toward the opposite sex, he also lays aside his personal likes and dislikes to work with his team and his school, and adopts almost slavishly the fads and frills dictated by those whom he elects as his *socii*. He now develops pride in his family, class, city, and nation, and not only civic and national patriotism can now be most effectively taught, but also love for humanity. . . .

4. *An age of restlessness.* Another strong characteristic of the period is the adolescent's eternal seeking after new experiences, new sensations, new excitements, new stimuli. This is true quite as much on the physical as on the mental side of life. On the former, you have noted doubtless the interest which youths have in perfecting skills and clevernesses, and in originating situations which call for ever newer and ever more skillful skills. On the latter, you have noted the thirst which young people ordinarily manifest in travel, change of scene, unusual experiences, novel and hitherto unthought-of intellectual diversions. It is the age in which the "thriller," whether it be in theatricals, or in literature, or mere sense experience, is sought after and courted as a fitting form of experiencing something new and untried. The race-course, the dance-hall, the moving-picture theater, the airship, the automobile, and scores of other sources of excitement are in good repute among most adolescents.

5. *An age of moods.* One never knows quite how to take

an adolescent in the early teens, because he may manifest such diametrically opposite moods all in the same day. He may be for a time in the depths of misery and blackest despair, and in the next hour rise to heights of great elation and satisfaction. Even in youths of sound common sense and the very reverse of the unstable this changeableness of mood is often to be observed. At one moment the youth is a good "mixer," socially-minded and happy in the bosom of his group; at the next he may seek solitude from the revelry and good cheer of his mates to plunge himself into the most melancholic introspecting and ruminating. In persons of unstable mentality, as we have pointed out above, the dangers of this period are enormous. Too much looking-inward may be the causation of the subsequent withdrawing of the unstable from the group and the centering

has been directed toward religious experience by this time the probabilities are strongly against their ever acquiring a very deep religious experience. The religious instinct, or the instinct to worship some thing or some body, is found in all peoples no matter how primitive they may be. In civilized human beings it seems not to become normally insistent much before the period mentioned.

Closely bound up in the instinct to worship which makes its strongest appearance in adolescence is the natural reverence for and interest in nature and the universe. To quote from Dr. Hall again:

The rapidly increasing brain connections make possible many new associations with their effects upon imagination and reason so that for the first time there is now a possibility of the youth seeing the universe as a universe and feeling it as divine. In the later teens most youths and maidens love to think of infinity, both in space and time. They try to picture it, and become filled with the sense of their own littleness and the vastness of the universe. Most often these reflections attach themselves to the heavenly bodies and the sky toward all of which the feelings are greatly deepened at adolescence. Now the sun moon and stars become foci for all sorts of symbolism and fancies sometimes sentimental and sometimes mythological and religious. Clouds also become in Ruskin's opinion one of the greatest stimulants to imagination as well as the most beautiful in their color and form and variations. The wind now echoes the restlessness of the youth and the sea attracts him with its suggestions of eternity. If it really is true that nature appeals to the youth primarily in this poetical way then it is little wonder that he has no love for high school and college science. To turn from the lover's moon to the burned-out cold dead moon of science from Shelley's cloud to a mass of cold aqueous vapor with a long Latin name from a glowing opal symbolic of faith and hope to a dry record of geologic ages from a heaven full of heroes hunters and maidens to estimates of the lengths of time necessary for a ray to reach us from one of them all this must kill the spontaneous interest in nature and at the very best substitute for it utilitarian motives.

8 An age of sexual interest. Previous to about the age of fifteen years children of opposite sexes manifest little

interest in each other. Often, indeed, boys are actually outspoken in their dislike for girls, whom they consider to be "silly," and perhaps physical "neaklings." Girls too not infrequently look upon boys as rough and barbarous, and rather to be shunned than cultivated. But from the middle teens this mutual dislike disappears, and the two sexes begin to feel a deep interest in each other. There is a pleasantness in the company of those of the other sex which previously did not exist in the minds of either in any particular degree. It is the age when good *camaraderie* exists between youths and maidens alike, a time when the foundations of firm and satisfying friendships between schoolmates are formed which endure throughout life.

The sex instinct is one of the two or three fundamental forms of behavior which shape all life and all ideals. Adolescence is the period when this instinct finds its expression in chivalrous attitudes toward woman, on the part of youths, and on the part of maidens respect and sympathy for men. Lives are easily shipwrecked in this trying period, and there is need for the greatest care and wisdom in directing the evolution of children through the most significant of all seasons, when the glamour of a dawning sex consciousness may easily throw the great and sacred things of life into false perspective and wrong relief.

9. *An age of great plasticity of nervous tissue.* Early adolescence is also characterized by the relative ease with which habits and attitudes are formulated. Previous to the dawn of the period certain fundamental habits of health and physical functioning have been formed, but it is in adolescence that the most significant life-habits and attitudes have their birth. Habits of industry or of shiftlessness and laziness; habits of thrift or of spendthriftiness; habits of reverence or of irreverence; attitudes of chivalry or of contempt, of toleration or of bigotry; all these and a score more of the basic habits and attitudes of human life are acquired for the most part in adolescence. Human nature is represented at this age, within its hereditary limits, as a mass of plastic

clay, responsive in its moulding to the will of the artisan. Once the age is over, the habits and attitudes already formed will remain hard as adamant. Nature offers few second chances after adolescence. Generally speaking, what the youth is at twenty-five he will be when he is forty-five, so far as basic attitudes toward life and its problems and possibilities are concerned.

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Waddle makes the statement that the typical delinquent is the boy approximately fifteen years old. Can you account for this incidence of delinquency in the early years of the adolescent period?
- 2 From your knowledge of the nature of adolescence, try to make a list of some of the more dangerous stimuli which are likely to be encountered by boys or girls during their early teens.
- 3 Endeavor to illustrate the various points of the lesson by reporting to class all possible additional incidents of which you may know which would tend to show that adolescence is an age of dreams of a heightened sense of self, of restlessness, of the social instincts of moods, etc.

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- 4 Hall G S *Educational Problems*, vol 2 chap 9
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Among these tribes the number of children allowed to survive is always very limited, the reason being, partly at least, that children are considered a hindrance in gaining a livelihood; and partly that they are continually in fear of famine, hence deem themselves compelled to keep down the birth-rate, or at least the *living*-rate. One particularly revolting custom of the Papuans is to bury children alive whenever the parents or some person of tribal importance dies, the excuse being that the parents will have need of the services of their children in the other world to which they are supposed to have gone. Cannibalism is still common among them, and usually it is the children who are massacred for the feasts.

Other primitive tribes. Among certain tribes of Central Australia twins are considered to be monstrosities, and are immediately put to death as something which is unnatural. Among the Kaffirs it was found that when twins are born, one is usually put to death, the sounder of the two being permitted to live. In some primitive regions the mother who bears twins is considered just as much a monstrosity as are the children themselves, and not infrequently both mother and infants are sacrificed. Among the Australian aborigines it is usual to destroy those children who are malformed or defective in physical features. In some parts of Africa a child born with teeth is put to death. In Kamchatka children born in stormy weather are likewise disposed of. One writer, quoted by Payne, states that the entire months of March and April, the last week in each month, and every Wednesday and Friday, are considered in Madagascar to be unlucky days, and any child born on any day included in this enumeration is put to death! Among certain Madagascar tribes a child who sneezes at or shortly after birth is exposed to the elements to die. Among the Basuto, when a child is born with its feet first, it is killed, whereas among the Bondei it is killed if it is born head first. The Bondei consider a child who cries at birth or immediately after unlucky, and forthwith strangle

is the father of many children." Often the Athenian would consent to bring up his first child, but exposed those subsequently born. The female baby was deemed to be of little importance, but the son must invariably be brought up, it being little less than a religious duty to rear him. It should be said in justice to the Greeks, however, that whenever a child was exposed it was usually with the hope that it would be discovered before too late and rescued from its fate. To this end the early part of the day was ordinarily chosen for the gruesome task of exposing the infant, in order that there might be greater chance of its being discovered before nightfall. Babies were deposited "in the hip podromes, at the entrance to the temples, and the sacred grottoes, where they would be most in evidence. A watch was kept on the place, or it was revisited in order to be sure of the fate of the infant."

The Romans You recall the story of the mythical founding of Rome by Romulus and Remus, and you recall also that Romulus and Remus were exposed, hefreed, and nursed by a she-wolf, and finally grew to manhood under her nurture. From this incident we may presume that exposure among the early Romans was likewise common. And, indeed, we know it to have been. The *pater potestas* gave the father complete power of life or death over his children. He could let them live or expose them according to his desire. Hence he often did the latter, if it pleased him. When Rome degenerated in its later period so hopelessly, the Roman attitude toward children perhaps reached its worst manifestation, notwithstanding the humanitarian efforts of some of the emperors to improve the situation. Undesired children were commonly abandoned to the streets or thrown into the Tiber. Commonly the exposed children were rescued by fakirs and mutilated in order to be for them a source of revenue to appealing to the sympathy and generosity of passers by. Thus, Seneca says referring to the mutilated children "Look on the blind wandering about the streets leaning on their sticks,

and on those with crushed feet, and still again look on those with broken limbs. This one is without arms; that one has had his shoulders pulled down out of shape in order that his grotesqueries may excite laughter. . . ."

It should not be forgotten, however, that through all these times of degeneracy and profligacy on the part of the idle and wealthy upper classes of Rome there was growing up slowly a better ideal of family life and the institutions based upon communal living among the common people, and that among these classes, at least, the true importance of the child was being gradually comprehended. It was after all the profligate upper classes who were the chief offenders. With the coming of Christianity and the teachings of Jesus, a new impetus was given to safeguarding the lives of the children, inasmuch as it was one of His own teachings that "a little child shall lead them."

In the Middle Ages. But after all the teachings of Christianity did not result in universal nor immediate amelioration of the estate of the children. The practice of ridding one's self of undesirable children persisted to such an extent down through the Middle Ages that the Church, as representing the most enlightened agency, was compelled to become the avowed protector of parentless children. Mothers who felt that they were unable to rear their children were enabled thus to deposit them in the care of the church authorities who engaged to rear them. "By the door of the churches it became the custom to have a marble receptacle in which mothers placed the children that they were forced to abandon." Yet in spite of this provision, so hard were conditions of living in the early ages of the Christian era, that thousands of children were thrown upon the highways or left in the deserts to die. In France, Germany, Flanders, Italy, and England it was always possible for poor parents to take their children to market and sell them "like the veriest chattels." Under the inspiring need of the times foundling hospitals and orphanages sprang up all over Europe, where the children who were deserted or abandoned

were given homes and brought up in some measure at least of comfort. In Paris, during the sixteenth and especially the seventeenth centuries, poverty was the rule rather than the exception, with the result that babies were thrown into the sewers daily by mothers who were unable to rear them. And again, as in ancient Rome, children fell into the hands of magicians and mountebanks, who deformed and mutilated them in order to make them an assistance in winning a livelihood.

The factory system. With the coming of the factory system in England, particularly in the seventeenth century, the abuses to which children had previously been subjected took a new turn. Forthwith any child who was a public charge was placed in the factories and set to work, regardless of his age or condition of health. Says Payne:

A little creature of six years was thought fit for labor in the town of Norwich, the chief seat of the clothing trade. Writers at that time, and among them some who were considered as eminently benevolent, mentioned "with exultation, the fact that in that single city boys and girls of tender age created wealth exceeding what was necessary for their own subsistence by twelve thousand pounds a year."

The overseers of the poor became the agents of the mill-owners, and arranged for days when the pauper children could be inspected and selected for the factory work. When the selections had been made, the children were conveyed by canal boats and wagons to the destination, and then their slavery began. Sometimes men who made a business of trafficking in children would transfer them to a factory district where they were kept in a dark cellar until the mill-owner, in want of hands, came to look them over and pick out those that he thought would be useful. Nominally the children were apprentices, but actually they were slaves, and their treatment was most inhuman. The parish authorities, in order to get rid of the imbeciles, often bargained that the mill-owners take one idiot with every twenty children. What became of the idiots after they had passed into the hands of the capitalists is not known, but in most cases they did not last long and mysteriously disappeared. . . . The children who were apprenticed out to the mill-owners were fed on the coarsest kind of food and in

the most disgusting way. They slept by turns, in relays, in beds that were never aired, for one set of children were turned into the beds as soon as another set had been driven out to their long and filthy toil. Some tried to run away, and after that they were worked with chains around their ankles, many died, and the little graves were unmarked in a desolate spot lest the number of the dead attract too much attention.

The amazing thing about it all is that for generations almost nothing was done to ameliorate the conditions in which innocent childhood found itself. Beginning shortly after the year 1800, various reformers and philanthropists and writers turned all the power of their invectives against the universal exploitation of childhood in England, but with little substantial result for fifty years or more. Among others Charles Dickens took the side of the victims of the factory system and the avaricious owners, and succeeded, perhaps more than any other person, in interesting the public in their condition. M. T. Sadler in the House of Commons, and Lord Shaftesbury in the House of Lords, represented the champions of the children in officialdom, and it was due in considerable measure to their efforts that restraining legislation was finally written upon the statute books of England. This fixed the number of hours which children should be permitted to labor, and limited both the kind of work and the age of the worker.

The eighteenth and the first half of the nineteenth centuries found the children of America similarly victims of child labor. Indeed, when the first cotton factory in this country was started (in Beverly, Massachusetts) it was stated that it would afford "employment to a great number of women and children many of whom will be otherwise useless, if not burdensome, to society." In 1806 a special committee reporting to the State Legislature of Massachusetts made the following statement concerning the somewhat prevalent custom of factory-owners canvassing for small children to operate their spindles and run their machinery: "Small help is scarce; a great deal of machinery has been

stopped for want of small help, so that the overseers have been going around to draw the small children from schools into the mills, the same as a draft in the army."

After the Civil War, however, a humanitarian movement began to spread all over this country in the interests of child welfare and conservation. Following upon the establishing in New York, in 1866, of the first Society for the Prevention of Cruelty to Animals, there grew, in 1874, a movement to look after the rights of children, a Society for the Prevention of Cruelty to Children, and dating from the organization of this latter society are the first special laws known in the world to protect children and punish wrongs done to them.

But the end is not yet. There still exist within our land the evils of child labor, of child abuse, and of child exploitation. We can take courage, however, from the fact that a strong and intelligent public opinion is being fostered throughout the length and breadth of these United States which condemns, in no uncertain terms, any and all agencies which "give offense unto one of these little ones."

TOPICS FOR SPECIAL STUDY AND REPORT

- 1 Secure the latest report of the National Child Labor Committee, and study the problem of child labor as it exists in our own country at the present time.
- 2 The ancient Spartans exposed puny or sickly children to die upon the mountain top they wanted none save vigorous children who would make vigorous and valorous soldiers. Contrast with this our own attitude toward weak or sickly infants. What conclusion do you draw as to the evolution of the social attitude?
- 3 Gather all the information possible concerning your own State or local branch of the Society for the Prevention of Cruelty to Children. Do you know of any cases where this society has intervened as between parents and child?
- 4 Familiarize yourself with the principal child labor laws of your own country or State.

SELECTED REFERENCE

- 1 Payne G H *The Child in Human Progress* chaps 1, 2 3 21, and 22, also for general reference

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